



CMD 26-M4 - CNSC Staff Submission

Regulatory Oversight Report for Canadian Nuclear Laboratories Sites: 2024

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Summary	This CMD presents the Regulatory Oversight Report for sites operated by Canadian Nuclear Laboratories (CNL) for the 2024 calendar year.
Actions required	There are no actions requested of the Commission. This CMD is for information only.



CMD 26-M4

Regulatory Oversight Report for Canadian Nuclear Laboratories Sites: 2024

Signed by:

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Canadian Nuclear
Safety Commission

Commission canadienne
de sûreté nucléaire

Canada

Regulatory Oversight Report for Canadian Nuclear Laboratories Sites: 2024

Canadian Nuclear Safety Commission

Regulatory Oversight Report for Canadian Nuclear Laboratories Sites: 2024

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Land acknowledgement

At the Canadian Nuclear Safety Commission (CNSC), we recognize the importance of consulting and building relationships with Indigenous Nations and communities and are committed to working together to ensure the safe and effective regulation of Canadian Nuclear Laboratories Sites.

We acknowledge that the facilities and activities regulated by the CNSC, including those covered in this Regulatory Oversight Report (ROR), are located on the traditional and treaty territories of Indigenous peoples across Canada, as listed in [Appendix G](#). We also recognize that when these sites were originally constructed, Indigenous consultation and engagement did not meet today's standards.

CNSC staff are committed to ongoing engagement and collaboration with Indigenous Nations and communities to better understand and address concerns related to the operation of Canadian Nuclear Laboratories Sites. We will continue to create meaningful opportunities for long-term engagement and encourage open, two-way dialogue to foster mutual understanding, even when perspectives differ.

The CNSC strives to be an open, culturally aware, and respectful organization that engages transparently and collaboratively with Indigenous Nations and communities. Our staff are committed to active listening, understanding our role in advancing reconciliation, and working together to support the safe and effective regulation of nuclear energy and materials.

Plain language summary

The *Regulatory Oversight Report for Canadian Nuclear Laboratories Sites: 2024* describes the regulatory oversight activities by the Canadian Nuclear Safety Commission (CNSC) and safety performance of the Canadian Nuclear Laboratories (CNL) sites:

- [Chalk River Laboratories](#) (CRL) – an operating nuclear research laboratory
- [Whiteshell Laboratories](#) (WL) – a nuclear research laboratory undergoing decommissioning
- Port Hope Area Initiative (PHAI):
 - [Port Hope Project](#) (PHP) – a long-term low-level radioactive waste remediation project
 - [Port Granby Project](#) (PGP) – a long-term low-level radioactive waste remediation project
 - Port Hope Pine Street Extension Temporary Storage Site – a temporary storage site for low-level radioactive waste
 - Port Hope Radioactive Waste Management Facility – a temporary storage facility for low-level radioactive waste
- [Douglas Point Waste Facility](#) – a shutdown prototype power reactor
- [Gentilly-1 Waste Facility](#) – a shutdown prototype power reactor
- [Nuclear Power Demonstration Waste Facility](#) – a shutdown prototype power reactor

This report also provides an update on CNSC staff's regulatory activities regarding Indigenous engagement, public information, community engagement, and parts of the CNSC's Independent Environmental Monitoring Program (IEMP) that relate to CNL facilities.

CNSC staff verified and confirmed that the CNL sites operated safely in 2024. Staff reached this conclusion following inspections, technical assessments of licensee reports, reviews of events and incidents, and general communication and exchanges of information with CNL.

Each year, CNSC inspectors conduct inspections at the CNL sites. The number of inspections and focus area depend on the nature and complexity of the individual site and its performance. The CNSC uses a risk-informed approach when planning inspections. In 2024, CNSC staff performed a total of 34 inspections at the CNL sites; the details of these inspections are covered in this report. The inspections resulted in the issuance of 101 notices of non-compliance (NNCs). Most of which have been addressed by CNL and closed by the CNSC. For the remaining open NNCs, CNL has an appropriate corrective action plan in place to prevent recurrences. None of the non-compliances identified in 2024 posed a risk to the health and safety of the public or the environment.

CNSC staff were involved in the oversight of several major projects occurring at CNL sites in 2024:

- Near Surface Disposal Facility
- Advanced Nuclear Materials Research Centre
- Modern Combined Electrolysis and Catalytic Exchange Facility
- Actinium-225 Initial Sales Project
- Land Lease for Commercial Project Development
- Gentilly-1 Fuel Transfer Project
- Unique Integrated Test Facility

[Details on these projects can be found in Section 4: Other Matters of Regulatory Interest](#)

CNSC staff evaluated CNL's performance across the 14 safety and control areas (SCAs). Each SCA's definition can be found in Appendix B. While the CNSC evaluates licensees across all SCAs, more detail is provided on the radiation protection, environmental protection and conventional health and safety SCAs, as these provide a good overview of safety performance at CNL sites. Details on these and the performance ratings for all SCAs are included in the report.

For 2024, CNSC staff rated all SCAs as "satisfactory", at all CNL sites except WL. At WL the areas of human performance management and emergency management and fire protection were rated as "below expectations". Details on these ratings can be found in Sections 2.2.6 and 2.2.10 respectively. CNL has compensatory measures in place for both programs; health, safety, security, and environment were not compromised. For a description of the different performance ratings, please refer to [Appendix A](#).

Despite the two ratings of below expectations at WL, CNSC staff conclude that:

- CNL operated safely within the bounds of its operating policies and principles
- CNL followed approved procedures that took adequate corrective actions for all events reported to the CNSC
- the health and safety of Indigenous Nations and communities and the public near CNL sites, as well as the surrounding environment, continue to be protected,
- workers at each CNL site have conducted the licensed activities safely and are properly protected,
- there were no releases from CNL sites that could have harmed the environment or the health and safety of people.

Referenced documents in this CMD are available to the public upon request, subject to confidentiality considerations.

1 Overview

1.1 Background

Each year, the Canadian Nuclear Safety Commission (CNSC) publishes regulatory oversight reports, which offer information on the safety performance of Canadian licensees who are authorized to use nuclear substances. The reports evaluate licensees based on their safety procedures and adherence to regulatory requirements. Key issues and emerging changes in regulation are also highlighted.

[Learn more about regulatory oversight reports](#)

1.2 Scope of report

This regulatory oversight report describes CNSC staff's regulatory oversight and the safety performance of Canadian Nuclear Laboratories (CNL) for the 2024 calendar year.

The report also provides an overview of licensee operations, major activities and developments at licensed facilities and sites, reportable events and details on major projects occurring at CNL sites. In addition, the report includes information on engagement with Indigenous Nations and communities, and public information programs.

1.2.1 Nuclear facilities covered by this report

Figure 1 shows the geographic locations of CNL's licensed facilities in Canada. It also indicates the type of waste stored at each facility.

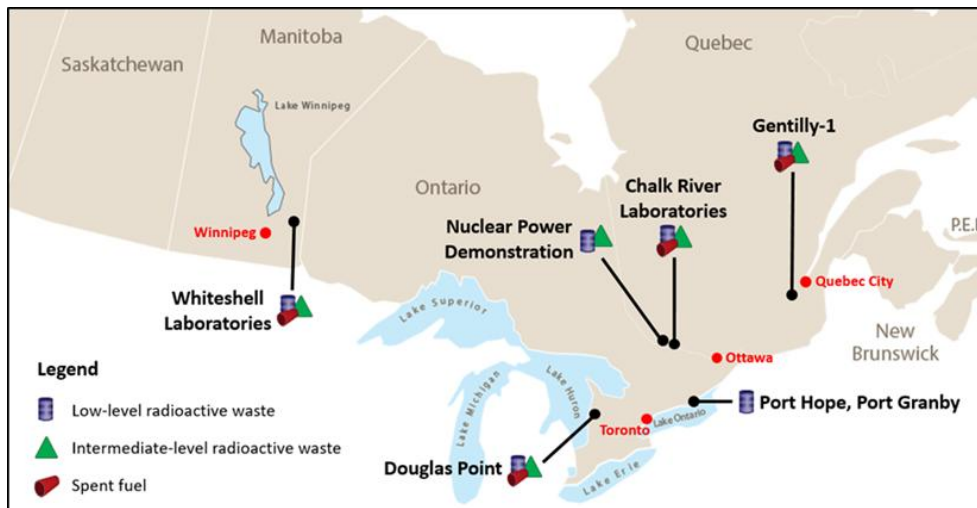


Figure 1: Locations of CNL facilities in Canada.

Table 1 provides the list of CNL facilities, the location and licensee in Canada. For additional information on each facility, please refer to the link provided in the table.

Table 1: CNL facilities in Canada 2024

Nuclear facility	Location	Licencee
Chalk River Laboratories (CRL)	Chalk River, Ontario	Canadian Nuclear Laboratories
Whiteshell Laboratories (WL)	Pinawa, Manitoba	
Port Hope Area Initiative (PHAI)	Port Hope, Ontario Port Granby, Ontario	
Douglas Point Waste Facility (DPWF)	Tiverton, Ontario	
Gentilly-1 Waste Facility (G1WF)	Bécancour, Québec	
Nuclear Power Demonstration Waste Facility (NPDWF)	Rolphoton, Ontario	

1.3 2024 regulatory oversight activities

The CNSC performs regulatory oversight of licensed facilities to verify compliance with the requirements of the [Nuclear Safety and Control Act](#) (NSCA) and the associated regulations made under it, each facility's licence and licence conditions, and any other applicable standards and regulatory documents (REGDOCs). For more information regarding changes to CNL licences and licence condition handbooks refer to [Appendix E](#).

1.3.1 Inspections

The CNSC uses inspections and surveillance and monitoring for compliance verification. Table 2 presents CNSC staff's inspection efforts for CNL facilities and sites for the reportable year. For a full list of inspections, SCA covered, and number of non-compliances, refer to [Appendix C](#).

Table 2: Number of CNSC-led inspections at CNL sites in 2024

Facility	Number of CNSC- led Inspections	Number of Notices of Non-Compliance (NNCs)
Chalk River Laboratories	17 ¹	58 ²
Whiteshell Laboratories	8	21
Port Hope Area Initiative	5	7
Douglas Point WF	1	6
Gentilly-1 WF	2	8
Nuclear Power Demonstration WF	1	1
TOTAL	34	101

CNSC staff have determined that the notices of non-compliance (NNCs) from inspections were adequately addressed either through closure or an appropriate corrective action plan and did not impact the safety of CNL sites.

2 Assessment of Safety and Control Areas

The CNSC regulates all aspects of safety at nuclear sites in Canada, including the health, safety, security, and the environment. CNSC staff use the SCA framework to assess, evaluate, review, verify and report on licensee performance. The SCA framework included 14 SCAs, which are subdivided into specific areas that define each SCA's key components. Further information on the SCA framework can be found on the CNSC's website.

[Learn more about the CNSC's safety and control area framework.](#)

CNSC staff assess performance in the 14 SCAs by verifying licensee compliance through planned or reactive desktop reviews and inspections. Each SCA's definition can be found in [Appendix B](#).

¹ In addition to 68 Surveillance and Monitoring walkdowns at CRL.

² The total number of NNCs reflects all CNSC issued enforcement actions for various facilities across CRL including but not limited to S&T, decommissioning, waste management areas, and special projects.

While this report addresses all 14 SCAs, the following 3 are discussed in greater detail: radiation protection, conventional health and safety, and environmental protection as they offer an overview of safety performance at CNL sites. The report also addresses the SCAs that were included in an inspection conducted or other regulatory oversight activities.

2.1 Chalk River Laboratories (CRL)

2.1.1 Overview

- Licence: 10-year licence granted in 2018
- Licence expiry: 2028
- Licensee: Canadian Nuclear Laboratories
- Location: Chalk River, Ontario



Figure 2: View of the CRL built-up area
(Source: CNL)

CRL is located in Chalk River, Ontario, 160 kilometers northwest of Ottawa (Figure 2), on the traditional, unceded territory of the

Algonquin Anishinaabeg People. CRL operates under a single licence that includes Class I and Class II nuclear facilities, waste management areas, radioisotope laboratories, support facilities and offices. CNL safely manages low, intermediate, and high-level radioactive wastes at the site. Where authorized by the current licensing basis, CNL is continuing to decommission facilities and is constructing and commissioning replacement facilities throughout the site.

[Learn more about Chalk River Laboratories](#)

Table 4: Summary of Safety Control Area performance ratings for CRL

Safety and control area	Rating
1. Management system	Satisfactory (SA)
2. Human performance management	Satisfactory (SA)

3. Operating performance	Satisfactory (SA)
4. Safety analysis	Satisfactory (SA)
5. Physical design	Satisfactory (SA)
6. Fitness for service	Satisfactory (SA)
7. Radiation protection	Satisfactory (SA)
8. Conventional health and safety	Satisfactory (SA)
9. Environmental protection	Satisfactory (SA)
10. Emergency management and fire protection	Satisfactory (SA)
11. Waste management	Satisfactory (SA)
12. Security	Satisfactory (SA)
13. Safeguards and non-proliferation	Satisfactory (SA)
14. Packaging and transport	Satisfactory (SA)

2.1.2 Radiation protection

CNL sites are required to implement and maintain a radiation protection program. CNSC staff compliance activities confirmed that the facilities and its processes were operated and maintained by CNL in accordance with their licensing basis. In 2024, CNSC staff conducted 11 inspections at CRL that included the Radiation Protection SCA which resulted in 11 notices of non-compliance (NNCs) issued to CNL. The NNCs have been grouped into themes and pertained to:

- processes lacked clarity for ensuring conduct of annual reviews of radiological zone plans
- absence of written communication provided to workers regarding their annual dose to the lens of the eye
- inconsistencies in labelling and registering long-term non-staging storage areas with the site's radiation protection organization as required by CNL's process
- an assessment missing on the placement of tritium air monitors

- labelling missing to indicate an out of service fume hood
- inaccessible ways to contact radiation protection staff near personnel contamination monitoring equipment at the exit of the National Research Universal (NRU) reactor rod storage bays or unavailability of personnel protective equipment at the whole-body monitor to limit any potential spread of contamination within the building
- high hazard monitors in the NRU reactor facility were not connected to Class III or Class II emergency power
- process was inconsistent for bringing food and medication into controlled areas
- labels on some radioactive source storage containers and for some areas with fixed surface contamination lacked information
- missing required radiation field measurements as per the CECEUD Test Facility Storage with Surveillance Plan
- missing required information on labels on some radioactive source storage containers

Due to the immediate actions taken by CNL, these non-compliances did not pose a risk to the health and safety of the workers. CNSC staff confirmed that CNL effectively implemented corrective actions to address the NNCs. CNSC staff will continue to maintain regulatory oversight and monitor CNL's progress on the remaining open NNCs.

Based on CNSC staff assessment, past performance history and regulatory oversight to date, CNSC staff determined that the Radiation Protection SCA at CRL meets the applicable regulatory requirements. A detailed summary of CRL's Radiation Protection performance is provided below.

Performance rating: Satisfactory (SA)

2.1.2.1 Application of ALARA

The CNL corporate ALARA process integrates ALARA into the design, planning, management, and control of radiological work activities.

In 2024, CNL continued to implement measures at CRL to keep doses to persons ALARA. Dose control points (DCPs) are used as a dose management tool for Nuclear Energy Workers' (NEWs) radiological exposures. If a NEW's dose exceeds their assigned DCP by more than 1 mSv, an ALARA assessment is documented to demonstrate that the dose received was justified and optimized, as applicable. In 2024, no NEW exceeded their assigned DCP at the CRL site.

2.1.2.2 Worker Dose Control

Radiation exposures of workers at the CRL site are ascertained, recorded, and monitored to ensure compliance with the CNSC's regulatory dose limits and to maintain radiation doses

ALARA. CRL uses CNL's licensed dosimetry service for external and internal dosimetry for site/facility workers.

Workers, including employees and contractors, conducting work activities which present a reasonable probability that the worker may receive an occupational dose greater than 1 mSv/year are identified as NEWs.

The CNSC's effective dose limit for NEWs is 50 mSv in a one-year dosimetry period. In 2024, the maximum effective dose received by a NEW at CRL was 4.22 mSv, which was well below the CNSC's effective dose limit.

The CNSC's equivalent dose limit for the skin and for the hands and feet for NEWs is 500 mSv in a one-year dosimetry period. In 2024, the maximum skin dose received by a NEW at CRL was 5.75 mSv. Extremity dosimeters were assigned to NEWs as dictated by the RP program requirements and based on radiological conditions of the work. In 2024, 233 workers were assigned extremity dosimeters, and the maximum extremity dose recorded was 32.37 mSv. Both results were below the CNSC's equivalent dose limit.

Data on dose to NEWs at CRL from 2020 to 2024 can be found in [Appendix J1](#).

The CNSC's effective dose limit for persons who are not NEWs is 1 mSv, per calendar year. In 2024, the maximum effective dose received by a person not considered as a NEW at CRL was 0.33 mSv, which was well below the CNSC's effective dose limit.

2.1.2.3 Radiation Protection Program Performance

The Radiation Protection SCA covers the implementation of a radiation protection program in accordance with the *Radiation Protection Regulations*. The program must ensure that contamination levels and radiation doses received by individuals are monitored, controlled, and maintained as low as reasonably achievable (ALARA). CNL sites are required to implement and maintain a radiation protection program. CNSC staff conducted regulatory oversight activities at the CRL site to verify that the radiation protection program complies with CNSC's regulatory requirements.

Action levels for radiological exposures are established as part of CNL's radiation protection program. If an action level is reached, it triggers CRL staff to determine the cause and, if applicable, restore the effectiveness of the RP program. In 2024, there were no action levels reached at CRL.

2.1.2.4 Radiological Hazard Control

CNL's radiation and contamination control measures include delineation of radiation zones (which are established based on the surface contamination and dose rate levels), posting and access control to radiation zones and personnel contamination control.

In 2024, the workplace monitoring program continued to be implemented at CRL to monitor and control radiological hazards. The radiological hazard surveys conducted at the CRL site did not identify any adverse trends and were consistent with expected radiological conditions. In addition, there were no contamination incidents that resulted in a recordable unplanned external or internal dose.

2.1.3 Environmental protection

The CNSC publishes data for annual loadings of radionuclides to the environment from nuclear facilities and this data is available on the [Open Government Portal](#).

In 2024, CNSC staff conducted 7 inspections at CRL that included the Environmental Protection SCA which resulted in 1 NNC issued to CNL. This NNC pertained to:

- controls on environmental releases from the decontamination of personnel

This non-compliance did not pose a risk to the health and safety of workers, the public and the environment. CNSC staff determined that the corrective actions taken by CNL to address this NNC were acceptable and the NNC is now considered closed.

Based on CNSC staff assessment of CRL's effluent and environmental monitoring results, past performance history and regulatory oversight to date, CNSC staff determined that the Environmental Protection SCA at CRL meets the applicable regulatory requirements. A detailed summary of CRL's Environmental Protection performance is provided below.

Performance rating: Satisfactory (SA)

2.1.3.1 Effluent and Emissions Control

CNSC staff confirm that CNL has implemented an effluent verification monitoring program at the CRL, which complies with CSA N288.5 [Effluent Monitoring Programs at Class I Nuclear Facilities and Uranium Mines and Mills](#). There were no regulatory or action level exceedances at CRL in 2024.

CNSC staff reviewed CRL's 2024 Effluent Verification Monitoring Program results, which indicated that:

- All airborne and liquid effluent radiological releases remained below their respective regulatory limits and Derived Release Limits (DRL)

- Overall, the emissions released were 0.13% of the DRL (of which 0.054% corresponds to airborne emissions and 0.077% corresponds to liquid emissions)

As a result of CNSC staff's review of CNL's Effluent Verification Monitoring Program annual monitoring report, CNSC staff concluded that the effluent verification monitoring programs currently in place at CRL are effective in protecting the environment and the public.

2.1.3.2 Assessment and Monitoring

In compliance with CSA N288.4 *Environmental monitoring programs at Class I nuclear facilities and uranium mines and mills*, CNL has implemented an Environmental Monitoring Program (EMP) at CRL.

CNSC staff's review of CNL's EMP annual compliance monitoring report results at CRL for the year 2024 indicate that the EMP currently in place for CRL protects the environment and the public.

2.1.3.3 Environmental Management System

The CNSC requires that licensees develop and maintain an Environmental Management System (EMS) to provide a documented framework for integrated activities related to environmental protection. An EMS includes activities such as establishing annual environmental objectives, goals, and targets.

CNL has established its corporate level EMS which is part of the CNL's overall Management System and applies to all the CNL sites operated in Canada. CRL's EMS conforms to and is accredited to the International Standards Organization (ISO) 14001:2015 Standard, Environmental Management Systems – Requirements with Guidance for Use.

2.1.3.4 Environmental Risk Assessment

The environmental risk assessment (ERA) conducted by licensees is a systematic process used to identify, quantify, and characterize the risk posed by contaminants and physical stressors to the environment and human health. An ERA includes an Ecological Risk Assessment and a Human Health Risk Assessment. As per REGDOC-2.9.1, [Environmental Protection: Environmental Principles, Assessments and Protection Measures](#) and CSA Standard N288.6, *Environmental risk assessments at nuclear facilities and uranium mines and mills* ERAs should be reviewed on a five-year cycle, at a minimum. CNL's most recently accepted ERA was completed in 2019 and thus the submission of an updated ERA was expected in January 2024. CNL notified CNSC of certain delays of the planned CNL follow-up studies required to support the recommendations in the next iteration of their ERA and requested a one-year extension on the due date for their ERA. Following a review, CNSC staff accepted CNL's proposal that the

updates to the ERA be completed and submitted to the CNSC by January 31, 2025. CNSC staff concluded that CNL continues to pursue the implementation of an effective ERA at CRL and that human health and the environment remain protected in the meantime.

In January 2025, CNL submitted the updated ERA, prepared following the updated CSA N288.6-22 standard. CNSC staff reviewed the updated ERA and identified areas requiring additional information, clarifications, and revisions. CNSC staff provided comments to CNL to address with the expectation to resubmit a revised ERA with a committed date of October 2025.

2.1.3.5 Protection of the Public

As part of the annual reporting to the CNSC, CNL provides data on dose to a hypothetical member of the public that is representative of someone who spends a considerable amount of time in proximity to the licensed site. CNL's data indicates that doses to the public resulting from CNL's operations at CRL remained well below the 1 mSv/year limit prescribed in the [Radiation Protection Regulations](#). At no point during 2024 did the emissions from the CRL site exceed the constraint for dose to the public of 0.30 mSv/year, as indicated in the CRL Licence Condition Handbook.

Table 5: CRL maximum effective dose to a member of the public from 2020 – 2024

Dose Data	2020	2021	2022	2023	2024	Regulatory Limit
Maximum effective dose (mSv)	0.0072	0.0037	0.0026	0.0024	0.0048	1 mSv/year

CNSC staff review of CNL's EMP annual compliance monitoring report results for non-radiological hazardous substances at CRL for the year 2024 indicated that CRL met the applicable regulatory requirements.

2.1.4 Conventional health and safety

As CNL sites are federally regulated, they are subject to the requirements of the [Canada Labour Code](#) and [Canada Occupational Health and Safety Regulations](#). CNL has developed and implemented a program to manage the workplace safety hazards and protection of workers on the job while ensuring compliance with the [Canada Labour Code](#) and [Canada Occupational Health and Safety Regulations](#).

Activities at CNL sites may be performed by contractors, most of which are provincially regulated, and as such contractors are subject to the provincial requirements. Contractors

performing work at CRL, are subject to their own health and safety programs in accordance with Ontario legislation. Contractor programs are reviewed and accepted by CNL and must meet or exceed the requirements of CNL's licences.

In 2024, CNSC staff conducted 11 inspections at CRL that included the Conventional Health and Safety SCA which resulted in 7 NNCs issued to CNL. These NNCs have been grouped into themes and pertained to:

- inadequate maintenance of first aid kits
- inappropriate personal protective equipment
- fall and tripping hazards
- missing barriers and signage to warn of hazards
- out of date inventory of chemical storage
- illegible instructions and inconvenient location for safety equipment (eye wash station)

CNSC staff determined that the corrective actions taken by CNL to address these non-compliances were acceptable and thus, the non-compliance did not pose a risk to the health and safety of workers, the public and the environment. All NNCs are considered closed.

Performance rating: Satisfactory (SA)

2.1.4.1 Performance

A key performance indicator for the Conventional Health and Safety SCA is the number of recordable lost-time injuries (RLTI) that occur per year, and the RLTI severity and frequency. A RLTI is defined as a workplace injury that results in the worker being unable to return to work for a period of time. RLTI severity and frequency provide context to the number of RLTIs. Severity quantifies the number of lost workdays experienced per 100 employees, while frequency quantifies the number of lost-time injuries relative to the number of hours worked.

In 2024, there were 14 RLTIs at CRL which led to 285 lost working days. The frequency of employee RLTIs was 0.52 while the severity was 10.69. The RLTIs have been grouped into themes and were as a result of:

- an employee using a crowbar and feeling discomfort in their lower back
- 3 employees slipping on snow/ice while performing a variety of activities
- 2 employees lifting a bag and feeling a sudden onset of pain
- an employee having an approved claim from the Workplace Safety and Insurance Board for presumption that injury/illness arose out of and in course of employment
- an employee becoming unresponsive after running ~5 kilometers but regained consciousness

- an employee getting a laceration to their thumb while grinding sharp edges off a piece of metal
- an employee doing a 2 person lift and feeling sudden pain and spasm in their arm
- an employee twisting material to wring out liquid and feeling a pop in their wrist
- an employee hitting their finger on a soap dispenser while washing hands
- an employee slipping on a mud spot
- an employee having their finger struck by a door that was slammed with a gust of wind

Contractor RLTI data is based on information voluntarily provided to the CNL Health Center by contracting companies and only includes the number of lost time injuring and working days lost. There were no contractor RLTIs in 2024.

2.1.4.2 Practices

When evaluating safety practices at a site, CNSC staff do not distinguish between the licensee's own staff and those of contractors or visitors, considering all to be 'workers' and equally subject to CNSC requirements and licensee policies. This is notable for CNL, as many CNL sites employ contractors to perform a wide variety of tasks. CNL's Improvement Action System is used by CNL to record all events, including injuries, at CNL sites. CNSC staff reviewed CNL's Improvement Action data to determine trends and monitor actions and determined that CNL's Improvement Action System was satisfactory in 2024.

2.1.5 Management system

In 2024, CNSC staff conducted 8 inspections at CRL that included the Management System SCA which resulted in 7 NNCs issued to CNL. These NNCs have been grouped into themes and pertained to:

- records missing unique identifiers making documents harder to retrieve, along with information missing in certain records
- an inconsistent and undefined numbering system used for some records
- document reviews and revisions not being conducted as per established revision cycle schedules
- unclear labelling on equipment with regards to calibration status
- missing thermometers in refrigerators storing environmental samples and no documentation for practices for reviewing the temperature ranges for these refrigerators

CNSC staff determined that the corrective actions taken by CNL to address these NNCs were acceptable and thus, the non-compliances did not pose a risk to the health and safety of

workers, the public and the environment. CNSC staff will continue to maintain regulatory oversight and monitor CNL's progress on the remaining open NNC.

Performance rating: Satisfactory (SA)

2.1.6 Human performance management

In 2024, CNSC staff conducted 7 inspections at CRL that included the Human Performance Management SCA which resulted in 3 NNCs issued to CNL. These NNCs have been grouped into themes and pertained to:

- inconsistencies in the learning management system, use of the learning management system and reporting of learning management system problems
- lack of documented evaluation for worker acceptable level of performance when training waivers were granted and on-the-job performance to verify that knowledge and skills were achieved
- lack of documentation to show justification, review and approval of changes made to training

The non-compliances did not pose a risk to the health and safety of workers, the public and the environment. CNSC staff determined that the corrective actions taken or planned to address these NNCs were acceptable, and all corrective actions have now been satisfactorily completed.

In 2024, CNL reported an event to CNSC staff where multiple CNL employees had expired radiation protection training. The employees were not notified of the pending expiry in advance or notified of expiry when the training had lapsed; however, CNL employees recently completed supplementary radiation protection training which included radiation protection concepts covered in the lapsed refresher training. CNL identified that their electronic learning management system (LMS), known as Learn-CNL, was not properly configured to notify all employees of upcoming training requirements, in advance of expiration, causing employees to miss required refresher training in radiation protection and other topics. CNL issued an executive management directive that required supervisors and managers to verify worker training to manually ensure workers are adequately trained to perform work before all work activities and then implemented corrections to the LMS. CNSC staff verified through follow-up inspections, documentation reviews and technical meetings that CNL's corrective actions were effective.

CNL confirmed that there was no risk to the public or environment relating to this incident. Furthermore, CNL informed CNSC staff that there was no increase in radiation dose or personnel contamination events at the CRL site.

CNSC staff continue to hold focused meetings to discuss CNL's progress of its regulatory commitments, and to maintain regulatory oversight.

Performance rating: Satisfactory (SA)

2.1.7 Operating performance

In 2024, CNSC staff conducted 8 inspections at CRL that included the Operating Performance SCA which resulted in 2 NNCs issued to CNL. These NNCs pertained to:

- many routine operating instructions for changing reactor configuration (e.g. valve slips) and some instructions to supervisors related to the NRU reactor facility were not reviewed as required
- the conduct of self-assessments to identify opportunities for continual improvement

CNSC staff determined that the corrective actions taken by CNL to address these NNCs were acceptable and thus, the non-compliances did not pose a risk to the health and safety of workers, the public and the environment. These NNCs are now considered closed.

Performance rating: Satisfactory (SA)

2.1.8 Safety analysis

In 2024, CNSC staff conducted 7 inspections at CRL that included the Safety Analysis SCA which resulted in no NNCs issued to CNL.

Performance rating: Satisfactory (SA)

2.1.9 Fitness for service

In 2024, CNSC staff conducted 6 inspections at CRL that included the Fitness for Service SCA which resulted in 1 NNCs issued to CNL. This NNC pertained to not conducting a periodic review of a facility maintenance plan.

CNSC staff determined that the corrective actions taken by CNL to address this NNC were acceptable, and thus, the non-compliance did not pose a risk to the health and safety of workers, the public and the environment. This NNC are now considered closed.

Performance rating: Satisfactory (SA)

2.1.10 Emergency management and fire protection

In 2024, CNSC staff conducted 12 inspections at CRL that included the Emergency Management and Fire Protection SCA which resulted in 21 NNCs issued to CNL. These NNCs pertained to:

- fire response equipment not being properly accounted for in the inventory and inspected, inventory list not being maintained
- inadequate levels of training for fire brigade members
- fire response crews not participating on the minimum number of fire response drills
- inadequate maintenance of qualification records for workers performing facility condition inspections
- undefined qualification requirements for workers who perform fire prevention inspections
- inconsistencies and inaccuracies in equipment inspection records
- lack of adequate sealing to maintain the integrity of the fire separation of fire compartments
- absence of functional latching hardware for some designated closures
- improper securing of compressed gas cylinders
- inadequate housekeeping procedure to minimize the probability and consequences of fires
- instances where transient materials (combustible waste, compressed gas cylinders, and use of extension cords) were not appropriately minimized or controlled
- inappropriate materials stored in flammable cabinets
- obstructions in hallways reducing the width of the means of egress significantly
- missing signage for emergency exits and where to locate fire extinguishers
- out of date pre-incident plan and emergency procedure
- exit doors not in good working condition
- improper installation of a portable fire extinguisher
- target time for sustained intervention through the implementation of fire attack plans not being met
- ineffective communication between members of the industrial fire brigade during an emergency exercise
- inappropriate use of personnel protective equipment
- fire hazard assessments not maintained in accordance with requirements

CNSC staff observed overall improvements in the implementation of the Emergency Preparedness and Fire Protection program at CRL in 2024. CNSC staff have determined that CNL has adequately risk-managed the safety concerns raised by CNSC staff, and have implemented appropriate corrective actions for each NNC. Additionally, CNSC staff continue to maintain increased regulatory scrutiny for the Emergency Preparedness and Fire Protection program at CRL, involving conducting quarterly Emergency Preparedness and Fire Protection program meetings with CNL, verifying closure of actions with an on-site presence, conducting additional desk-top reviews, as well as conducting an Emergency Preparedness and Fire Protection program inspection in 2024.

Based on CNL's performance in 2024 and the actions taken to address these NNCs, CNSC staff concluded that CRL has met applicable regulatory requirements however continue to maintain regulatory oversight and monitor CNL's progress on the remaining open NNCs.

All non-compliances are considered to be low-risk and did not have an impact on the health and safety of workers or the public, nor an impact to the environment.

Performance rating: Satisfactory (SA)

2.1.11 Waste management

In 2024, CNSC staff conducted 9 inspections at CRL that included the Waste Management SCA which resulted in 2 NNCs issued to CNL. These NNCs pertained to:

- lack of formal training on waste segregation
- absence of secondary containment for a waste drum labelled as liquid waste

CNSC staff determined that the corrective actions taken by CNL to address these NNCs were acceptable and thus, the non-compliances did not pose a risk to the health and safety of workers, the public and the environment. These NNCs are now considered closed.

Performance rating: Satisfactory (SA)

2.1.12 Security

In 2024, CNSC staff conducted 4 inspections at CRL that included the Security SCA which resulted in 2 NNCs issued to CNL. These NNCs pertained to maintenance of records and processes. CNSC staff determined that the corrective actions taken by CNL to address these NNCs were acceptable and thus, the non-compliances did not pose a risk to the health and safety of workers, the public and the environment. These NNCs are now considered closed.

In 2023, CNSC staff conducted a focused cyber-security inspection which resulted in 13 NNCs. CNSC staff requested that CNL review its cyber security program to better understand the circumstances that led to these non-compliances and determine immediate compensatory measures to strengthen the program. Following these findings, CNL developed an implementation plan that identified immediate actions and compensatory measures to strengthen its cyber security program and provided assurance that the implementation of these actions would mitigate any potential security risks until the program gaps and non-compliances are fully addressed.

In 2024, CNL provided a corrective action plan to CNSC staff to address the 13 NNCs. During 2024, CNSC staff conducted quarterly meetings with CNL to monitor the completion of the immediate actions and compensatory measures, and the corrective actions taken to address the NNCs. Following an on-site meeting at CNL in April 2024, CNSC concluded that the

immediate actions and compensatory measures adequately mitigated the risk identified in the inspection report. Throughout 2024, CNL worked to complete their planned actions to address the NNCs and requested closure of all NNCs. CNSC staff reviewed the actions and has closed 11 of the 13 NNCs. CNSC staff will continue to maintain regulatory oversight and monitor CNL's progress on the remaining open NNCs.

Performance rating: Satisfactory (SA)

2.1.13 Safeguards and non-proliferation

CNSC staff assess CNL's performance in the Safeguards and Non-Proliferation SCA through desktop reviews, reportable events ([Appendix D1](#)), and through the course of inspections ([Appendix C1](#)). Under the terms of the Canadian-IAEA safeguards agreements, the IAEA has the right to perform independent verification activities at sites in Canada, including CRL. In 2024, there were 62 IAEA-led inspections (CNSC staff accompanied the IAEA on 37 of the IAEA activities) and 2 CNSC-led inspections at CRL that included the Safeguards and Non-Proliferation SCA. The CNSC-led inspections resulted in no NNCs to CNL and out of the 62 IAEA-led inspections, only 1 was deemed to have concluded with unsatisfactory results by the IAEA, stemming from the significant amounts of nuclear material not being accessible for verification. The inaccessible material was legacy waste in a material balance area. CNSC staff and the IAEA are working with CNL to implement a new safeguards approach which will address this anomaly. CRL continued to maintain adequate documentation and submissions regarding the Safeguards and Non-Proliferation SCA to the CNSC.

Performance rating: Satisfactory (SA)

2.1.14 Other Safety and Control Areas

The oversight activities for the following SCAs were similar in 2024 and reached the same conclusions:

- Physical Design
- Packaging and Transport

CNSC staff engaged in continuous oversight as well as other compliance activities, including desktop reviews of submissions, quality manuals and design reports, holding periodic update meetings regarding licensing and compliance ongoings at the site, as well as ensuring compliance through CNL's own event reporting ([Appendix D1](#)). CRL's performance in these SCAs has remained unchanged in 2024.

Performance rating: Satisfactory (SA)

2.2 Whiteshell Laboratories (WL)

2.2.1 Overview

- Licence: 3-year licence granted in 2025
- Licence expiry: end of 2027
- Licensee: Canadian Nuclear Laboratories
- Location: Pinawa, Manitoba



Figure 3: Whiteshell Laboratories main campus
(Source: CNL)

WL is a former nuclear research and test facility located near Pinawa, Manitoba that was established in the early 1960s (Figure 3). It is located in the homeland of the Red River Métis, Treaty 1 and Treaty 3 territories, and the traditional territory of the Anishinaabe and Ojibway Peoples. The WL site is also located in the vicinity of Treaty 5 territory. The site hosted a 60-megawatt thermal (MWth) Whiteshell Reactor No. 1 (WR-1), a SLOWPOKE demonstration reactor, other research and support facilities, and a waste management area that contains low-, intermediate- and high-level radioactive waste. The WR-1 and SLOWPOKE reactors were permanently shut down in 1985 and 1990, respectively. Decommissioning activities at WL commenced in 2003. CNL applied for a 3-year renewal for the WL decommissioning licence on November 21, 2023. The Licensing Hearing occurred on October 23-24, 2024. The Commission made the decision to renew the WL decommissioning licence for a 3-year period, which started on January 1, 2025. The oversight activities discussed in this regulatory oversight report fall under the previous licence issued to CNL for the WL site.

[Learn more about Whiteshell Laboratories](#)

Table 6: Summary of Safety Control Area performance ratings for WL

Safety and control area	Rating
1. Management system	Satisfactory (SA)
2. Human performance management	Below Expectations (BE)
3. Operating performance	Satisfactory (SA)
4. Safety analysis	Satisfactory (SA)
5. Physical design	Satisfactory (SA)
6. Fitness for service	Satisfactory (SA)
7. Radiation protection	Satisfactory (SA)
8. Conventional health and safety	Satisfactory (SA)
9. Environmental protection	Satisfactory (SA)
10. Emergency management and fire protection	Below Expectations (BE)
11. Waste management	Satisfactory (SA)
12. Security	Satisfactory (SA)
13. Safeguards and non-proliferation	Satisfactory (SA)
14. Packaging and transport	Satisfactory (SA)

2.2.2 Radiation protection

CNL sites are required to implement and maintain a radiation protection program.

CNSC staff compliance activities confirmed that the WL facilities and its processes were operated and maintained by CNL in accordance with their licensing basis.

In 2024, CNSC staff conducted 2 inspections at WL that included the Radiation Protection SCA which resulted no NNCs issued to CNL.

Based on CNSC staff assessment, past performance history and regulatory oversight to date, CNSC staff determined that the Radiation protection SCA at WL meets the applicable regulatory requirements. A detailed summary of WL's Radiation Protection performance is provided below.

Performance rating: Satisfactory (SA)

2.2.2.1 Application of ALARA

The CNL corporate as low as reasonably achievable (ALARA) process integrates ALARA into the design, planning, management, and control of radiological work activities. In 2024, CNL continued to implement the corporate ALARA process at WL to control doses and minimize exposures.

Dose control points (DCPs) are used as a dose management tool for Nuclear Energy Workers' (NEWs) radiological exposures. If a NEW's dose exceeds their assigned DCP by more than 1 mSv, an ALARA assessment is documented to demonstrate that the dose received was justified and optimized, as applicable. In 2024, no NEW exceeded the assigned DCP at the WL site.

2.2.2.2 Worker Dose Control

Radiation exposures of workers at the WL site are ascertained, recorded, and monitored to ensure compliance with the CNSC's regulatory dose limits and to maintain radiation doses ALARA. WL uses CNL's licensed dosimetry service for external and internal dosimetry for site/facility workers.

Workers, including employees and contractors, conducting work activities which present a reasonable probability that the worker may receive an occupational dose greater than 1 mSv/year are identified as NEWs.

The CNSC's effective dose limit for NEWs is 50 mSv in a one-year dosimetry period. In 2024, the maximum effective dose received by a NEW at WL was 0.26 mSv, which was well below the CNSC's effective dose limit.

The CNSC's equivalent dose limit for the skin and for the hands and feet for NEWs is 500 mSv in a one-year dosimetry period. In 2024, the maximum skin dose received by a NEW at WL was 0.54 mSv.

Extremity dosimeters were assigned to NEWs as dictated by the RP program requirements and based on radiological conditions of the work. In 2024, 11 workers were assigned extremity dosimeters, and the maximum extremity dose recorded was 0.51 mSv. Both results were below the CNSC's equivalent dose limit.

Data on dose to NEWs at WL from 2020 to 2024 can be found in [Appendix J2](#).

The CNSC's effective dose limit for persons who are not NEWs is 1 mSv, per calendar year. In 2024, the maximum effective dose received by a person not considered as a NEW at WL was 0.11 mSv, which was below the CNSC's effective dose limit.

2.2.2.3 Radiation Protection Program Performance

The Radiation Protection SCA covers the implementation of a radiation protection program in accordance with the Radiation Protection Regulations. The program must ensure that contamination levels and radiation doses received by individuals are monitored, controlled, and maintained as low as reasonably achievable (ALARA). CNL sites are required to implement and maintain a radiation protection program. CNSC staff conducted regulatory oversight activities at the WL site to verify that the radiation protection program complies with CNSC's regulatory requirements. Action levels for radiological exposures are established as part of CNL's radiation protection program. If an action level is reached, it triggers WL staff to determine the cause and, if applicable, restore the effectiveness of the RP program. In 2024, no action levels were reached at WL.

2.2.2.4 Radiological Hazard Control

Radiation and contamination control programs include the use of radiation zone controls, surface contamination monitoring, in-plant air monitoring and radiological dose rate surveys. The programs continued to be implemented at WL to control and minimize radiological hazards and the spread of radioactive contamination. In 2024, there were no contamination events reported that resulted in a recordable unplanned external or internal dose.

2.2.3 Environmental protection

The CNSC publishes data for annual loadings of radionuclides to the environment from nuclear facilities and this data is available on the [Open Government Portal](#).

CNSC staff assess CNL's performance in the Environmental Protection SCA through desktop reviews, reportable events ([Appendix D3](#)), and through the course of inspections ([Appendix C2](#)). In 2024, CNSC staff conducted 1 inspection at WL that included the Environmental Protection SCA which resulted in 1 NNC which pertained to the maintenance of sampling and analytical procedures. The non-compliance did not pose a risk to the health and safety of workers, the public and the environment. CNSC staff determined that the corrective actions taken by CNL to address this NNC was acceptable and the NNC is now considered closed. A detailed summary of WL's Environmental Protection performance is provided below.

Performance rating: Satisfactory (SA)

2.2.3.1 Effluent and Emissions Control

CNSC staff confirm that CNL has implemented an effluent verification monitoring program at the WL, which complies with CSA N288.5, [Effluent Monitoring Programs at Class I Nuclear Facilities and Uranium Mines and Mills](#). There were no regulatory exceedances related to the Environmental Protection SCA at WL in 2024.

In September and November 2024, CNL reported action level exceedances to CNSC for pH measured in outfall liquid effluent samples (effluent samples were a monthly average of samples collected weekly). The pH measured was just below the acceptable pH range and was not expected to have any impacts on the Winnipeg River, the environment, or the public. CNL investigated the event, reviewed pH monitoring data from around the site, reviewed precipitation and river level data, and implemented a new sampling location along the Winnipeg River to monitor pH in intake water to the facility. After an investigation, this event was attributed to natural changes in the environment since recent monitoring data for the Winnipeg River has shown lower pH values than in the past and CNL had no known site activities that would have contributed to a low pH. CNSC staff were satisfied with CNL's response and the actions taken to investigate this event.

Details of WL's Effluent Verification Monitoring Program results are summarized below:

- all airborne and liquid effluent releases remained well below their respective regulatory release limits
- the sewage lagoon effluent was discharged once from WL in 2024
- overall, radiological airborne emissions remained 0.2% of the DRL
- there were no reported spills to the environment

As a result of CNSC staff's review of CNL's effluent verification monitoring program annual monitoring report, CNSC staff concluded that the effluent verification monitoring program currently in place at WL is effective in protecting the environment and the public.

2.2.3.2 Assessment and Monitoring

In compliance with CSA N288.4, [Environmental Monitoring Program at Class I Nuclear Facilities and Uranium Mines and Mills](#), CNL has implemented an Environmental Monitoring Program (EMP) at WL.

CNSC staff's review of CNL's EMP annual report results at WL for the year 2024 indicate that the EMP currently in place for WL met the applicable regulatory requirements and remains protective of the public and environment.

2.2.3.3 Environmental Management System

The CNSC requires that licensees develop and maintain an Environmental Management System (EMS) in order to provide a documented framework for integrated activities related to environmental protection. An EMS includes activities such as establishing annual environmental objectives, goals, and targets.

CNL has established its corporate level EMS which is part of the CNL's overall Management System and applies to all the CNL sites operated in Canada. WL's EMS conforms to and is accredited to the International Standards Organization (ISO) 14001:2015 Standard, [Environmental Management Systems – Requirements with Guidance for Use](#).

2.2.3.4 Environmental Risk Assessment

CNL submitted the Lagoon and Landfill (2021) and site-wide environmental risk assessments (ERAs) (2023) for the WL site. CNSC staff reviewed both ERAs and provided comments on technical content and compliance with CSA N288.6-22, [Environmental risk assessments at nuclear facilities and uranium mines and mills](#). A revised submission of the site-wide ERA, which included the operational status of the Lagoon and Landfill, was submitted and accepted by CNSC staff in October 2024 prior to the WL site licence renewal hearing. CNSC staff concluded that the site-wide ERA was compliant with CSA N288.6-22 and that human health and the environment remain protected.

2.2.3.5 Protection of the Public

As part of annual reporting to the CNSC, CNL provides data on dose to a hypothetical member of the public that is representative of someone who spends a considerable amount of time in the proximity to the licensed site.

Based on CNSC staff assessment of the results in CNL's 2024 environmental monitoring programs, CNSC staff conclude that the releases of hazardous and nuclear substances from the WL site met regulatory requirements.

Table 7: WL maximum effective dose to a member of the public from 2020 – 2024

Dose Data	2020	2021	2022	2023	2024	Regulatory Limit
Maximum effective dose (mSv)	0.0000029	0.00001	0.00002	0.00006	0.000095	1 mSv/year

2.2.4 Conventional health and safety

As CNL sites are federally regulated, they are subject to the requirements of the [Canada Labour Code](#) and [Canada Occupational Health and Safety Regulations](#). CNL has developed and implemented a program to manage the workplace safety hazards and protect workers on the job while ensuring compliance with the [Canada Labour Code](#) and [Canada Occupational Health and Safety Regulations](#).

Activities at CNL sites may be performed by contractors, most of which are provincially regulated, and as such contractors are subject to the provincial requirements. In most cases, contractors performing work at WL are subject to their own health and safety programs in accordance with the Manitoba legislation, which are reviewed and accepted by CNL. Contractor programs must meet or exceed the requirements of CNL's licences.

CNSC staff compliance activities demonstrated that the facilities and activities were operated and maintained by CNL according to their licensing basis.

In 2024, CNSC staff conducted 2 inspections at WL that included the Conventional Health and Safety SCA which resulted in 1 NNC issued to CNL. This NNC pertained to the use of improper safety signage. CNSC staff determined that the corrective actions taken by CNL to address this NNC were acceptable, and the NNC is now considered closed.

CNSC staff compliance activities demonstrate that the WL facilities and activities were operated and maintained by CNL according to their licensing basis.

Performance rating: Satisfactory (SA)

2.2.4.1 Performance

A key performance indicator for the Conventional Health and Safety SCA is the number of recordable lost-time injuries (RLTI) that occur per year, and the RLTI severity and frequency. A RLTI is defined as a workplace injury that results in the worker being unable to return to work for a period of time. RLTI severity and frequency provide context to the number of RLTIs. Severity quantifies the number of lost workdays experienced per 100 employees, while frequency quantifies the number of lost-time injuries relative to the number of hours worked.

In 2024, there were 4 RLTIs at WL which led to 6 lost working days. The frequency of employee RLTIs was 1.07 while the severity was 1.61. The RLTIs were as a result of:

- an employee feeling a pull in their back after lifting a tool bag
- an employee stumbling while carrying a box up a stairway
- an employee reporting tweaking their lower back while walking
- an employee reporting that their knee popped out while walking on dry, level ground

Contractor RLTI data is based on information voluntarily provided to the CNL Health Center by contracting companies and only includes the number of lost time injuring and working days lost. There were no contractor RLTIs in 2024.

2.2.4.2 Practices

When evaluating safety practices at a site, CNSC staff do not distinguish between the licensee's own staff and those of contractors or visitors, considering all to be 'workers' and equally subject to CNSC requirements and licensee policies. This is notable for CNL, as many CNL sites employ contractors to perform a wide variety of tasks. CNL's Improvement Action System is used by CNL to record all events, including injuries, at CNL sites. CNSC staff reviewed CNL's Improvement Action data to determine trends and monitor actions and determined that CNL's Improvement Action System was satisfactory in 2024.

2.2.5 Management system

In 2024, CNSC staff conducted 5 inspections at WL that included the Management System SCA which resulted in 2 NNCs issued to CNL. These NNCs pertained to:

- failure to follow the engineering change control process
- failure to meet document control requirements for some governing documents

CNL is addressing these issues through its corrective action processes and corrective action plan. These NNCs fall under the Management System SCA, but are related to CNL's emergency response and fire protection program. The associated risks with these NNCs are mitigated by redundant safety measures that are currently in place at WL, which includes fire response drills and backup fire water pumps. CNSC staff have found that CNL maintains general fire response equipment maintenance per requirements and determined that these non-compliances are isolated and not indicative of broader performance issues. Nonetheless, CNSC staff are conducting increased regulatory scrutiny of WL's management system. CNSC staff will continue to maintain regulatory oversight and monitor CNL's progress on these NNCs until they are closed.

Performance rating: Satisfactory (SA)

2.2.6 Human performance management

In 2024, CNSC staff conducted 5 inspections at WL that included the Human Performance Management SCA which resulted in 3 NNCs issued to CNL. These NNCs have been grouped into themes and pertained to:

- workplace Hazardous Materials Information System training qualification not being reviewed and maintained as required
- the training system not being used to systematically analyze, design, develop, implement, evaluate, document and manage:
 - the training program for the Emergency Operations Centre Commander role at WL
 - the new training and the revision of existing training, including continuing training for the Firefighter role

CNSC staff will continue to maintain regulatory oversight and monitor CNL's progress on these NNCs until they are closed.

In 2023, there was an Event Initial Report, which was presented to the Commission that identified deficiencies that were found during a self-assessment conducted by CNL of WL's Fire Protection Program. In relation to the Human Performance Management SCA, deficiencies were raised regarding training. In addition, issues raised in relation to the Emergency Management and Fire Protection Program resulted in minimum staff complement not being maintained, which led to the Human Performance Management SCA falling below CNSC staff expectations in 2023.

In 2024, CNSC staff observed improvements regarding staffing at WL. After the completion of WL's Multi-Phase Restart Plan, CNL has implemented processes that ensure a sufficient number of licensee personnel. However, further improvement is needed for CNL's performance in the specific area of personnel training to meet CNSC staff's expectations. Gaps continue to be observed in some training programs using the Systematic Approach to Training. CNSC staff will maintain increased regulatory scrutiny on CNL's training program, including semi-annual meetings with CNL's training department, desktop and technical reviews, and the addition of a Facility Specific Personnel Training Inspection to the compliance verification plan. For that reason, the 2024 rating for the Human Performance Management SCA remains below expectations.

Performance rating: Below Expectations (BE)

2.2.7 Operating performance

In 2024, CNSC staff conducted 3 inspections at WL that included the Operating Performance SCA which resulted in no NNCs issued to CNL.

Performance rating: Satisfactory (SA)

2.2.8 Safety analysis

In 2024, CNSC staff conducted 1 inspection at WL that included the Safety Analysis SCA, which resulted in 1 NNC issued to CNL. The NNC pertained to maintenance of the safety analysis report for the Concrete Cannister Storage Facility. The report was not maintained to ensure all credible event sequences which could occur at the nuclear facility were evaluated. Additionally, program documentation for safety analysis was missing the requirement to have periodic reviews. CNSC staff determined that the corrective actions taken by CNL to address this NNC were acceptable and thus, the non-compliance did not pose a risk to the health and safety of workers, the public and the environment. This NNC is now considered closed.

Performance rating: Satisfactory (SA)

2.2.9 Fitness for service

In 2024, CNSC staff conducted 1 inspection at WL that included the Fitness for Service SCA which resulted in 5 NNCs issued to CNL. These NNCs pertained to gaps in the programmatic implementation of maintenance, reliability and aging management requirements.

CNL is working to improve its maintenance, reliability and aging management processes and has developed an implementation plan for safety related systems at WL nuclear facilities. CNSC staff will continue to review CNL's implementation plan and monitor its progress through increased regulatory oversight at quarterly meetings and compliance verification activities.

Additionally, CNL is required to conduct annual inspections of the WL Waste Management Area concrete bunkers in accordance with the Periodic Inspection Plan and report the results annually to CNSC staff. CNL also performs quarterly inspections of the Concrete Canister Storage Facility (CCSF). These CCSF inspections have shown no significant degradation. CNSC staff have reviewed the inspection reports submitted by CNL for 2024 and determined that the WL Waste Management concrete bunkers and the CCSF continue to be fit for service.

Performance rating: Satisfactory (SA)

2.2.10 Emergency management and fire protection

In 2024, CNSC staff conducted 4 inspections at WL that included the Emergency Management and Fire Protection SCA which resulted in 7 NNCs issued to CNL. These NNCs pertained to:

- non-compliance with fire protection program audit requirements
- standard operating procedures for fire fighting lacking additional brigade members standing by to provide assistance or rescue
- absence of fire hazard assessment for the storage of nuclear substances within the Concrete Cannister Storage Facility

- lack of necessary oversight to monitor the implementation of procedures during impairments
- emergency response plans not being maintained as required
- housekeeping practices not being effectively implemented to minimize the probability and consequences of fires
- non-compliance with pre-fire planning requirements

CNSC staff will continue to maintain regulatory oversight and monitor CNL's progress on the remaining open NNCs until they are closed.

Additionally, following the event initial report presented to the Commission in 2023 on the safety stand-down at WL following the discovery of non-compliances in the fire protection program, CNSC staff have observed improvements in the implementation of the emergency preparedness and fire protection programs at Whiteshell Laboratories in 2024.

[See full background details of the WL FPP deficiencies and site stand-down event in June 2023](#)

After the completion of WL's Multi-Phase Restart Plan to return to normal operations, CNL continues to improve the fire protection provisions that directly support the licensed facilities and supporting infrastructure. CNSC staff observed improved performance in the identification and reporting of unplanned fire impairments; however, performance improvements are required to ensure that the duration of impairments is for the shortest period possible. Additionally, CNSC staff observed performance issues in ensuring timely corrective actions for non-compliances identified in housekeeping and fire protection inspections. CNSC staff will maintain increased regulatory scrutiny on Emergency Management and Fire Protection programs at WL for the duration of the licence period, including the conduct of an Emergency Management and Fire Protection Program inspection. In 2024, CNSC staff conclude that WL continues to be rated below expectations for the Emergency Management and Fire Protection SCA.

Performance rating: Below Expectations (BE)

2.2.11 Waste management

In 2024, CNSC staff conducted 2 inspections at WL that included the Waste Management SCA which resulted in 1 NNC issued to CNL which pertained to characterization reports lacking sufficient detail to provide the necessary information to demonstrate compliance with operational limits for storage of waste packages. CNSC staff determined that the corrective actions taken by CNL to address this NNC was acceptable and thus, the non-compliance did not pose a risk to the health and safety of workers, the public and the environment. This NNC is now considered closed.

Performance rating: Satisfactory (SA)

2.2.12 Security

In 2024, CNSC staff conducted 1 inspection at WL that included the Security SCA which resulted in no NNCs issued to CNL.

Performance rating: Satisfactory (SA)

2.2.13 Safeguards and non-proliferation

CNSC staff assess CNL's performance in the Safeguards and Non-Proliferation SCA through desktop reviews, reportable events ([Appendix D3](#)), and through the course of CNSC- or IAEA-led inspections ([Appendix C7](#)). Under the terms of the Canadian-IAEA safeguards agreements, the IAEA has the right to perform independent verification activities at sites in Canada, including WL. CNSC staff accompany IAEA during their activities. In 2024, there were 2 IAEA-led inspections at WL (CNSC staff accompanied the IAEA on both of the IAEA activities). Both inspections (Physical Design Verification and Design Information Verification) were conducted successfully. No significant issues were identified as a result of these inspections. WL continued to maintain adequate documentation and submissions regarding the Safeguards and Non-Proliferation SCA to the CNSC.

Performance rating: Satisfactory (SA)

2.2.14 Packaging and transport

In 2024, CNSC staff conducted 1 inspection at WL that included the Packaging and Transport SCA which resulted in no NNCs issued to CNL.

Performance rating: Satisfactory (SA)

2.2.14 Other Safety and Control Areas

The oversight activities for the Physical Design SCA were similar in 2024 and reached the same conclusion. CNSC staff engaged in continuous oversight as well as other compliance activities, including desktop reviews of submissions, quality manuals and design reports, holding periodic update meetings regarding licensing and compliance ongoings at the site, as well as ensuring compliance through CNL's own event reporting ([Appendix D3](#)). WL's performance in the Physical Design SCA has remained unchanged in 2024.

Performance rating: Satisfactory (SA)

2.3 Port Hope Area Initiative (PHAI)

2.3.1 Overview

- Licence: 10-year licence granted in 2023
- Licence expiry: 2032
- Licensee: Canadian Nuclear Laboratories
- Location: Port Hope and Clarington, Ontario



Figure 4: Work in Port Hope –
Waterfront Sites (Source: CNL)

The PHAI represents the Government of Canada’s commitment to the cleanup and safe, local, long-term management of historic low-level radioactive waste (LLRW) in two Southern Ontario municipalities – Port Hope and Clarington. The waste is the result of radium and uranium processing in Port Hope between 1933 and 1988 by the former Crown corporation Eldorado Nuclear Limited and its private-sector predecessors.



Figure 5: Port Granby – Remediation
Completed (Source: CNL)

The PHAI is based on community-recommended solutions for the cleanup and safe long-term management of approximately 1.7 million cubic meters of LLRW. It is currently one of Canada’s largest environmental remediation projects.

The PHAI is being carried out as two projects – the Port Hope Project (PHP) and the Port Granby Project (PGP). CNL is implementing the PHAI on behalf of Atomic Energy of Canada Limited, a federal Crown corporation.

The PHAI is based on the traditional lands and waters of the Michi Saagiig Anishinaabe People, the Gunshot Treaty (1787-88), the Williams Treaties

(1923), and the Williams Treaties Settlement Agreement (2018).

In 2024, ongoing remediation activities were undertaken at PHAI. CNL completed restoration of the Lions Park site and completed remediation of the Waterworks West site.

[Learn more about the Port Hope Area Initiative](#)

Table 8: Summary of Safety and Control Area performance ratings for PHAI

Safety and control area	Rating
1. Management system	Satisfactory (SA)
2. Human performance management	Satisfactory (SA)
3. Operating performance	Satisfactory (SA)
4. Safety analysis	N/A
5. Physical design	Satisfactory (SA)
6. Fitness for service	Satisfactory (SA)
7. Radiation protection	Satisfactory (SA)
8. Conventional health and safety	Satisfactory (SA)
9. Environmental protection	Satisfactory (SA)
10. Emergency management and fire protection	Satisfactory (SA)
11. Waste management	Satisfactory (SA)
12. Security	Satisfactory (SA)
13. Safeguards and non-proliferation	Satisfactory (SA)
14. Packaging and transport	Satisfactory (SA)

2.3.2 Radiation protection

The Radiation Protection SCA covers the implementation of a radiation protection program in accordance with the [Radiation Protection Regulations](#). The program must ensure that contamination levels and radiation doses received by individuals are monitored, controlled and maintained as low as reasonably achievable (ALARA). CNL sites are required to implement and maintain a radiation protection program.

CNSC staff compliance activities confirmed that the facilities and its processes were operated and maintained by CNL in accordance with their licensing basis. For more detailed information on the assessment of this SCA, see the subsections below.

Performance rating: Satisfactory (SA)

2.3.2.1 Application of ALARA

The CNL corporate ALARA process integrates ALARA into the design, planning, management, and control of radiological work activities. In 2024, CNL continued to implement the corporate ALARA process at PHAI to control doses and minimize exposures.

Dose control points (DCPs) are used as a dose management tool for Nuclear Energy Workers' (NEWs) radiological exposures. If a NEW's dose exceeds their assigned DCP by more than 1 mSv, an ALARA assessment is documented to demonstrate that the dose received was justified and optimized, as applicable. In 2024, no NEW exceeded their assigned DCP at the PHAI site.

2.3.2.2 Worker Dose Control

Radiation exposures of workers at PHAI are ascertained, recorded, and monitored to ensure compliance with the CNSC's regulatory dose limits and to maintain radiation doses ALARA. Dosimeters are used for measuring external doses (whole body and skin) of workers. Internal doses for PHAI workers, resulting from exposure to radon progeny and long-lived alpha, are determined by indirect methods using concentration levels in air and time spent in work areas, or through the use of Personal Alpha Dosimeters.

Workers, including employees and contractors, conducting work activities which present a reasonable probability that the worker may receive an occupational dose greater than 1 mSv/year are identified as NEWs.

The CNSC's effective dose limit for NEWs is 50 mSv in a one-year dosimetry period. In 2024, the maximum effective dose received by a NEW at PHAI was 0.40 mSv, which was well below the CNSC's effective dose limit.

The CNSC's equivalent dose limit for the skin and for the hands and feet for NEWs is 500 mSv in a one-year dosimetry period. In 2024, the maximum skin dose received by a NEW at PHAI was 0.64 mSv. Extremity dosimeters were assigned to NEWs as dictated by the RP program requirements and based on radiological conditions of the work. In 2024, 14 workers were assigned extremity dosimeters, and the maximum extremity dose recorded was 1.38 mSv. Both results were below the CNSC's equivalent dose limit.

Data on dose to NEWs at PHAI from 2020 to 2024 can be found in [Appendix J3](#).

The CNSC's effective dose limit for persons who are not NEWs is 1 mSv, per calendar year. In 2024, the maximum effective dose received by a person not considered as a NEW at PHAI was 0.09 mSv, which was well below CNSC's effective dose limit.

2.3.2.3 Radiation Protection Program Performance

CNSC staff conducted regulatory oversight activities at the PHAI site to verify that the radiation protection program complies with CNSC's regulatory requirements. In 2024, CNSC staff conducted 2 inspections at PHAI that included the Radiation Protection SCA which resulted in 1 NNC issued to CNL. This NNC pertained to missing information and incomplete records related to radiation protection, and absence of appropriate labelling on a radiological waste bin. CNSC staff confirmed that CNL effectively implemented corrective actions to address this non-compliance and it is now considered closed.

Action levels for radiological exposures are established as part of CNL's radiation protection program. If an action level is reached, it triggers PHAI staff to determine the cause and, if applicable, restore the effectiveness of the radiation protection program. In 2024, no action levels were reached.

2.3.2.4 Radiological Hazard Control

Radiation and contamination control programs are established at the PHAI to control and minimize radiological hazards and the spread of radioactive contamination. Routine monitoring across the PHAI in 2024 confirmed that work activities were effectively executed while minimizing the spread of contamination.

2.3.3 Environmental protection

The CNSC publishes data for annual loadings of radionuclides to the environment from nuclear facilities and this data is available on the [Open Government Portal](#).

In 2024, CNSC staff conducted 2 inspections at the PHAI that included the Environmental Protection SCA which resulted in no NNCs issued to CNL.

Based on CNSC staff assessment of PHAI's effluent and environmental monitoring results, past performance history and regulatory oversight to date, CNSC staff determined that the Environmental Protection SCA at PHAI met the applicable regulatory requirements. A detailed summary of PHAI's Environmental Protection performance is provided below.

Performance rating: Satisfactory (SA)

2.3.3.1 Effluent and Emissions Control

CNL has implemented and maintains an effluent verification monitoring program at the PHAI that meets regulatory requirements.

CNSC staff reviewed the PHAI's 2024 effluent monitoring results which indicate that:

- all airborne and liquid effluent releases of radiological and hazardous substances in surface water, groundwater, soil, sediment, air, dust, noise, and gamma exposure were below regulatory limits
- there was an action level exceedance for a cement dust plume that left the perimeter of the Harbour Centre Pier site from the sediment processing area. The dust plume occurred during an offloading of cement into the cement silo and was caused by a failed gasket that was not secured to the filter housing of the cement silo. The plume of dust travelled east over the Ganaraska River and was visible for approximately 4 minutes before dissipating. This incident occurred once and no recurrences are expected. This was not considered to be a Reportable Event.
- all airborne and liquid effluent releases of radiological and hazardous substances remained well below their regulatory limits except 1 occurrence where copper and zinc exceeded the Environmental Compliance Approval ECA limits for the Potable Water Treatment System located at the Port Hope Harbour and Centre Pier. This was not considered to be a Reportable Event.
- treated effluent samples were collected by CNSC staff at both PHP and PGP waste-water treatment plants during environmental protection inspections and were analyzed at the CNSC laboratory; all sample results were below the release limits and action levels

Overall, CNSC staff determined that the effluent verification monitoring program at PHAI continues to be protective of the environment and the public.

2.3.3.2 Assessment and Monitoring

Bluff seepage water samples were collected by CNSC staff from the PGP long-term waste management facility during an environmental protection inspection and analyzed at the CNSC Laboratory. All sample results were within the expected range documented in CNL's enhanced biophysical and environmental monitoring program.

CNSC staff conclude that the environmental monitoring programs in place for the PHAI are compliant with applicable regulatory requirements and are protective of the environment and the public.

2.3.3.3 Environmental Management System

The CNSC requires that licensees develop and maintain an Environmental Management System (EMS) in order to provide a documented framework for integrated activities related to environmental protection. An EMS includes activities such as establishing annual environmental objectives, goals, and targets.

CNL has established its corporate level EMS which is part of the CNL's overall Management System and applies to all the CNL sites operated in Canada, including PHAI.

2.3.3.4 Environmental Risk Assessment

As the PHAI licence does not fall under the Class I Nuclear Facility designation, CNL is not required to have an ERA as per REGDOC 2.9.1, [*Environmental Protection: Environmental Principles, Assessments and Protection Measures*](#).

2.3.3.5 Protection of the Public

As part of annual reporting to the CNSC, CNL provides data on dose to a hypothetical member of the public that is representative of someone who spends a considerable amount of time in the proximity to the licensed site.

Based on CNSC staff assessment of the results in CNL's 2024 environmental monitoring programs, CNSC staff conclude that the releases of hazardous and nuclear substances from CNL sites met the regulatory requirements.

Table 9: Port Hope Project (PHP) maximum effective dose to a member of the public from 2020 – 2024

Dose Data	2020	2021	2022	2023	2024	Regulatory Limit
Maximum effective dose (mSv)	0.033	0.023	0.028	0.020	0.03	1 mSv/year

Table 10: Port Granby Project (PGP) maximum effective dose to a member of the public from 2020 – 2024

Dose Data	2020	2021	2022	2023	2024	Regulatory Limit
Maximum effective dose (mSv)	0.020	0.041	0.033	0.01	0.03	1 mSv/year

2.3.4 Conventional health and safety

As CNL sites are federally regulated, they are subject to the requirements of the [Canada Labour Code](#) and [Canada Occupational Health and Safety Regulations](#). CNL has developed and implemented a program to manage the workplace safety hazards and protect workers on the job while ensuring compliance with the [Canada Labour Code](#) and [Canada Occupational Health and Safety Regulations](#).

The majority of activities performed for the PHAI are performed by contractors which are provincially regulated, and as such are subject to the provincial requirements. In most cases, contractors performing work for PHAI are subject to their own health and safety programs in accordance with Ontario legislation, which are reviewed and accepted by CNL. Contractor programs must meet or exceed the requirements of CNL's licences.

CNSC staff compliance activities demonstrate that the facilities and activities were operated and maintained by CNL according to their licensing basis. In 2024, CNSC staff conducted 2 inspections that included the Conventional Health and Safety SCA which resulted in 1 NNC issued to CNL, which pertained to a worker not wearing adequate personal protective equipment. CNSC staff determined that the corrective actions taken by CNL to address this non-compliance were acceptable, and this NNC is now considered closed.

Performance rating: Satisfactory (SA)

2.3.4.1 Performance

A key performance indicator for the Conventional Health and Safety SCA is the number of recordable lost-time injuries (RLTI) that occur per year, and the RLTI severity and frequency. A RLTI is defined as a workplace injury that results in the worker being unable to return to work for a period of time. RLTI severity and frequency provide context to the number of RLTIs. Severity quantifies the number of lost workdays experienced per 100 employees, while frequency quantifies the number of lost-time injuries relative to the number of hours worked.

In 2024, there was 1 RLTI at PHAI which led to 6 lost working days. The RLTI was the result of a worker's face being splashed with an acid solution, injuring their face and eye. CNSC staff were satisfied with CNL's corrective actions to prevent future recurrence of this event. The frequency of employee RLTIs was 0.31 while the severity was 1.84.

Contractor RLTI data is based on information voluntarily provided to the CNL Health Center by contracting companies and only includes the number of lost time injuring and working days lost. There were no contractor RLTIs in 2024.

2.3.4.2 Practices

When evaluating safety practices at a site, CNSC staff do not distinguish between the licensee's own staff and those of contractors or visitors, considering all to be 'workers' and equally subject to CNSC requirements and licensee policies. This is notable for CNL, as many CNL sites employ contractors to perform a wide variety of tasks. CNL's Improvement Action System is used by CNL to record all events, including injuries, at CNL sites. CNSC staff reviewed CNL's Improvement Action data to determine trends and monitor actions and determined that CNL's Improvement Action System was satisfactory in 2024.

2.3.5 Management system

In 2024, CNSC staff conducted 1 inspection at PHAI that included the Management System SCA which resulted in 3 NNCs issued to CNL. These NNCs pertained to:

- absence of evidence to demonstrate that certain requirements from a risk assessment were integrated into the appropriate work instructions/procedures
- missing information on radiation signage and a backlog for contractors to submit their radiation protection records/reports
- inconsistent implementation of oversight plans

CNSC staff determined that the corrective actions taken by CNL to address these NNCs were acceptable and thus, the non-compliance did not pose a risk to the health and safety of workers, the public and the environment. These NNCs are now considered closed.

Performance rating: Satisfactory (SA)

2.3.6 Physical design

In 2024, CNSC staff conducted 1 inspection at PHAI that included the Physical Design SCA which resulted in 1 NNC issued to CNL. This NNC pertained to not having a monitoring plan for the newly constructed harbour walls or sufficient evidence that the toe pins for the steel sheet pile wall and the combi-wall are compliant with design requirements. CNSC staff will continue to maintain regulatory oversight and monitor CNL's progress of this NNC until it is considered closed.

Performance rating: Satisfactory (SA)

2.3.7 Fitness for service

In 2024, CNSC staff conducted 1 inspection at PHAI that included the Fitness for Service SCA which resulted in 1 NNC issued to CNL. This NNC pertained to monitoring equipment and

sensors at the Port Granby long-term waste management facility not being functional at the time of the inspection, along with maintenance deficiencies. CNSC staff found CNL's response to this NNC to be acceptable. In CNL's most recent correspondence regarding this NNC on May 26, 2025, CNL stated that they have engaged a specialized engineering firm to assess the current state of the sensor arrays, review and analyze the data from the sensors deemed to be functional and to identify any potential gaps in the monitoring program, providing remedial options to CNL as required. CNSC staff have requested that CNL provide a copy of the results of this assessment for review once available. This NNC will remain open to track the submission of the results of this assessment.

Performance rating: Satisfactory (SA)

2.3.8 Emergency management and fire protection

In 2024, CNSC staff conducted 2 inspections at PHAI that included the Emergency Management and Fire Protection SCA which resulted in no NNCs issued to CNL.

Performance rating: Satisfactory (SA)

2.3.9 Safeguards and non-proliferation

Under the terms of the Canadian-IAEA safeguards agreements, the IAEA has the right to perform independent verification activities at sites in Canada, including PHAI. In 2024, there were 2 IAEA-led inspections at PHAI (CNSC staff accompanied the IAEA on both of the IAEA activities), which resulted in no NNCs to CNL and had satisfactory result statements from the IAEA. PHAI continued to maintain adequate documentation and submissions regarding the Safeguards and Non-Proliferation SCA to the CNSC.

Performance rating: Satisfactory (SA)

2.3.10 Packaging and transport

In 2024, CNSC staff conducted 1 inspection at PHAI that included the Packaging and Transport SCA which resulted in no NNCs issued to CNL.

Performance rating: Satisfactory (SA)

2.3.11 Other Safety and Control Areas

The oversight activities for the following SCAs were similar in 2024 and reached the same conclusions:

- Human Performance Management

- Operating Performance
- Waste Management
- Security

CNSC staff engaged in continuous oversight as well as other compliance activities, including desktop reviews of submissions, quality manuals and design reports, holding periodic update meetings regarding licensing and compliance ongoings at the site, as well as ensuring compliance through CNL's own event reporting ([Appendix D4](#)). PHAI's performance in these SCAs has remained unchanged in 2024.

Performance rating: Satisfactory (SA)

2.4 Douglas Point Waste Facility (DPWF)

2.4.1 Overview

- Licence: 10-year licence granted in 2021
- Licence expiry: 2030
- Licensee: Canadian Nuclear Laboratories
- Location: Tiverton, Ontario



Figure 6: Douglas Point Waste Facility

The DPWF located in Tiverton, Ontario on the Bruce nuclear site is a partially decommissioned prototype power reactor (Figure 6). The DPWF is located within the Traditional and Treaty Territory of the Saugeen Ojibway Nation (SON), and the traditional harvesting areas of the Georgian Bay Métis Nation of Ontario (MNO) Region 7 and the Historic Saugeen Métis (HSM) Peoples. The 200-megawatt electric (MWe) prototype Canada deuterium uranium (CANDU) power reactor was put into service in 1968 and

permanently shut down in 1984. CNL safely manages low- and intermediate-level radioactive wastes, as well as spent nuclear fuel stored in concrete dry storage canisters at the DPWF site.

In 2024, ongoing hazard abatement and waste characterization activities were undertaken at the DPWF. CNL also completed removal of the above-grade Administration Building and Ancillary Building structures.

[Learn more about Douglas Point Waste Facility](#)

Table 11: Summary of Safety Control Area performance ratings for DPWF

Safety and control area	Rating
1. Management system	Satisfactory (SA)
2. Human performance management	Satisfactory (SA)
3. Operating performance	Satisfactory (SA)
4. Safety analysis	Satisfactory (SA)
5. Physical design	Satisfactory (SA)
6. Fitness for service	Satisfactory (SA)
7. Radiation protection	Satisfactory (SA)
8. Conventional health and safety	Satisfactory (SA)
9. Environmental protection	Satisfactory (SA)
10. Emergency management and fire protection	Satisfactory (SA)
11. Waste management	Satisfactory (SA)
12. Security	Satisfactory (SA)
13. Safeguards and non-proliferation	Satisfactory (SA)
14. Packaging and transport	Satisfactory (SA)

2.4.2 Radiation protection

The Radiation Protection SCA covers the implementation of a radiation protection program in accordance with the [Radiation Protection Regulations](#). The program must ensure that contamination levels and radiation doses received by individuals are monitored, controlled and maintained as low as reasonably achievable (ALARA). CNL sites are required to implement and maintain a radiation protection program.

CNSC staff compliance activities confirmed that the facilities and its processes were operated and maintained by CNL in accordance with their licensing basis. For more detailed information on the assessment of this SCA, see the subsections below.

Performance rating: Satisfactory (SA)

2.4.2.1 Application of ALARA

The CNL corporate ALARA process integrates ALARA into the design, planning, management, and control of radiological work activities. In 2024, CNL continued to implement the corporate ALARA process at DPWF to control doses and minimize exposures.

Dose control points (DCPs) are used as a dose management tool for Nuclear Energy Workers' (NEWs) radiological exposures. If a NEW's dose exceeds their assigned DCP by more than 1 mSv, an ALARA assessment is documented to demonstrate that the dose received was justified and optimized, as applicable. In 2024, no NEW exceeded their assigned DCP at DPWF.

2.4.2.2 Worker Dose Control

Radiation exposures of workers at the DPWF site are ascertained, recorded, and monitored to ensure compliance with the CNSC's regulatory dose limits and to maintain radiation doses ALARA. DPWF uses CNL's licensed dosimetry service for external and internal dosimetry for site/facility workers.

Workers, including employees and contractors, conducting work activities which present a reasonable probability that the worker may receive an occupational dose greater than 1 mSv/year are identified as NEWs.

The CNSC's effective dose limit for NEWs is 50 mSv in a one-year dosimetry period. In 2024, the maximum effective dose received by a NEW at DPWF was 0.82 mSv, which was well below the CNSC's effective dose limit.

The CNSC's equivalent dose limit for the skin and hands and feet for NEWs is 500 mSv in a one-year dosimetry period. In 2024, the maximum skin dose received by a NEW at DPWF was 0.98 mSv. Extremity dosimeters were assigned to NEWs as dictated by the RP program requirements and based on radiological conditions of the work. In 2024, 5 workers were assigned extremity dosimeters, and the maximum extremity dose recorded was 0.36 mSv. Both results were below the CNSC's equivalent dose limit.

Data on dose to NEWs at DPWF from 2020 to 2024 can be found in [Appendix J4](#).

The CNSC's effective dose limit for persons who are not NEWs is 1 mSv, per calendar year. In 2024, persons not considered as NEWs at the DPWF received no recordable effective doses.

2.4.2.3 Radiation Protection Program Performance

CNSC staff conducted regulatory oversight activities at the DPWF site to verify that the radiation protection program complies with CNSC's regulatory requirements. In 2024, CNSC staff conducted 1 inspection at DPWF that included the Radiation Protection SCA which resulted in no NNCs issued to CNL.

Action levels for radiological exposures are established as part of CNL's radiation protection program. If an action level is reached, it triggers DPWF staff to determine the cause and, if applicable, restore the effectiveness of the radiation protection program. In 2024, no action levels were reached.

2.4.2.4 Radiological Hazard Control

Radiation and contamination control programs are established at the DPWF to control and minimize radiological hazards and the spread of radioactive contamination. The radiological hazard surveys for gamma radiation conducted in 2024 at the DPWF did not identify any adverse trends and were consistent with expected radiological conditions. In 2024, elevated levels of loose surface contamination in excess of CNL's zoning limits were discovered in 2 rooms inside the Service Building. Decontamination and other hazard reduction measures were taken, and the rooms are now designated at the correct Radiological Safety Zone.

2.4.3 Environmental protection

The CNSC publishes data for annual loadings of radionuclides to the environment from nuclear facilities and this data is available on the [Open Government Portal](#).

In 2024, there was 1 inspection conducted by CNSC staff at DPWF that included the Environmental Protection SCA which resulted in no NNCs.

CNL provided rationale for not triggering requirements under CSA N288.4, [*Environmental monitoring programs at Class I nuclear facilities and uranium mines and mills*](#) for DPWF; thus determining that environmental monitoring programs at these facilities were not required. CNSC staff assessed CNL's information and concluded as such.

Performance rating: Satisfactory (SA)

2.4.3.1 Effluent and Emissions Control

CNL has implemented and maintains an effluent verification monitoring program for DPWF that meets regulatory requirements. There were no regulatory or action level exceedances at DPWF in 2024.

CNSC staff reviewed DPWF's 2024 effluent monitoring results which indicate that:

- airborne and liquid releases remained well below their regulatory release limits and DRLs (tritium and gross beta releases to air were less than <0.01% of their DRL; tritium and gross beta releases in liquid effluent were less than <0.01% of their DRL)
- there were no regulatory limit exceedances and no reported spills to the environment

CNSC staff determined that the effluent verification monitoring program at DPWF continues to be protective of the environment and the public.

2.4.3.2 Assessment and Monitoring

As DPWF is located within the Bruce Nuclear Site, CNL has confirmed that the Bruce Power environmental monitoring program potentially captures any environmental impacts emanating from the small contribution of DPWF. Review of Bruce Power's monitoring results indicate that the releases to the environment, potentially including contributions from DPWF, remained well below their respective regulatory limits.

2.4.3.3 Environmental Management System

The CNSC requires that licensees develop and maintain an Environmental Management System (EMS) in order to provide a documented framework for integrated activities related to environmental protection. An EMS includes activities such as establishing annual environmental objectives, goals, and targets.

CNL has established its corporate level EMS which is part of the CNL's overall Management System and applies to all the CNL sites operated in Canada, including DPWF.

2.4.3.4 Environmental Risk Assessment

CNL had a 2019 Environmental Risk Assessment (ERA) for the DPWF that met requirements of CSA N288.6-12, [*Environmental risk assessments at class I nuclear facilities and uranium mines and mills*](#). In 2024, CNL provided a revised ERA in accordance with CSA N288.6-22, [*Environmental risk assessments at nuclear facilities and uranium mines and mills*](#). CNSC staff reviewed the revised ERA and provided comments to CNL. CNL provided a revision to their original submission to address CNSC's comments and staff were satisfied that the revision met regulatory requirements.

2.4.3.5 Protection of the Public

As part of annual reporting to the CNSC, CNL provides data on dose to a hypothetical member of the public that is representative of someone who spends a considerable amount of time in the proximity to the licensed site.

In 2024, members of the public received no measurable radiation doses from DPWF's operations. Based on CNSC staff assessment of the results in CNL's 2024 environmental monitoring programs, CNSC staff conclude that the releases of hazardous and nuclear substances from the DPWF site met the regulatory requirements.

2.4.4 Conventional health and safety

As CNL sites are federally regulated, they are subject to the requirements of the [Canada Labour Code](#) and [Canada Occupational Health and Safety Regulations](#). CNL has developed and implemented a program to manage the workplace safety hazards and protect workers on the job while ensuring compliance with the [Canada Labour Code](#) and [Canada Occupational Health and Safety Regulations](#).

A key performance indicator for this SCA is the number of recordable lost-time injuries (RLTI) that occur per year, and the RLTI severity and frequency. Data on number, frequency, and severity of RLTI from 2020 to 2024 are included in [Appendix I](#).

Many activities at CNL sites may be performed by contractors, most of which are provincially regulated, and as such contractors are subject to the provincial requirements. In most cases, contractors performing work at DPWF are subject to their own health and safety programs in accordance with Ontario legislation, which are reviewed and accepted by CNL. Contractor programs must meet or exceed the requirements of CNL's licences.

CNSC staff compliance activities demonstrate that the facilities and activities were operated and maintained by CNL according to their licensing basis. In 2024, CNSC staff conducted 1 inspection at DPWF that included the Conventional Health and Safety SCA which resulted in 1 NNC issued to CNL, which pertained to expired items in a first aid kit and total quantity of first aid kits not aligning with DPWF emergency procedures. CNSC staff determined that the corrective actions taken by CNL to address this non-compliance were acceptable, and this NNC is now considered closed.

Performance rating: Satisfactory (SA)

2.4.4.1 Performance

A key performance indicator for the Conventional Health and Safety SCA is the number of recordable lost-time injuries (RLTI) that occur per year, and the RLTI severity and frequency. A

RLTI is defined as a workplace injury that results in the worker being unable to return to work for a period of time. RLTI severity and frequency provide context to the number of RLTIs. Severity quantifies the number of lost workdays experienced per 100 employees, while frequency quantifies the number of lost-time injuries relative to the number of hours worked.

In 2024, there were no RLTIs at DPWF.

Contractor RLTI data is based on information voluntarily provided to the CNL Health Center by contracting companies and only includes the number of lost time injuring and working days lost. There were no contractor RLTIs in 2024.

2.4.4.2 Practices

When evaluating safety practices at a site, CNSC staff do not distinguish between the licensee's own staff and those of contractors or visitors, considering all to be 'workers' and equally subject to CNSC requirements and licensee policies. This is notable for CNL, as many CNL sites employ contractors to perform a wide variety of tasks. CNL's Improvement Action System is used by CNL to record all events, including injuries, at CNL sites. CNSC staff reviewed CNL's Improvement Action data to determine trends and monitor actions and determined that CNL's Improvement Action System was satisfactory in 2024.

2.4.5 Management system

In 2024, CNSC staff conducted 1 inspection at DPWF that included the Management System SCA which resulted in no NNCs issued to CNL.

Performance rating: Satisfactory (SA)

2.4.6 Fitness for service

In 2024, CNSC staff conducted 1 inspection at DPWF that included the Fitness for Service SCA which resulted in no NNCs issued to CNL.

Performance rating: Satisfactory (SA)

2.4.7 Emergency management and fire protection

In 2024, CNSC staff conducted 1 inspection at DPWF that included the Emergency Management and Fire Protection SCA which resulted in 4 NNCs issued to CNL. The NNCs have been grouped into themes and pertained to:

- inconsistencies in emergency equipment being properly inventoried, inspected, tested, and maintained in state of readiness at all times

- discrepancies between the building pre-incident plans and the location of equipment in the building, egress aisle obstruction, and missing updates of pre-incident plans to account for temporarily shuttered entrances
- absence of records for drills or exercises demonstrating that all emergency measures outlined in DPWF's emergency procedures have been tested
- no secondary means of communication for emergency notifications in the event of a radio failure

CNSC staff determined that the corrective actions taken by CNL to address these NNCs were acceptable and that the impact on the overall effectiveness of related programs was negligible.

Performance rating: Satisfactory (SA)

2.4.8 Waste management

In 2024, CNSC staff conducted 1 inspection at DPWF that included the Waste Management SCA which resulted in 1 NNC issued to CNL for only tracking outgoing waste packages and not maintaining an up-to-date inventory of radioactive waste on site. CNSC staff determined that the corrective actions taken by CNL to address this NNC were acceptable and thus, the non-compliance did not pose a risk to the health and safety of workers, the public and the environment. This NNC is now considered closed.

Performance rating: Satisfactory (SA)

2.4.9 Safeguards and non-proliferation

CNSC staff assess CNL's performance in the Safeguards and Non-Proliferation SCA through desktop reviews, reportable events ([Appendix D4](#)), and through the course of inspections ([Appendix C4](#)). Under the terms of the Canadian-IAEA safeguards agreements, the IAEA has the right to perform independent verification activities at sites in Canada, including DPWF. In 2024, there were 2 IAEA-led inspections at DPWF (CNSC staff accompanied the IAEA on both IAEA activities), which resulted in no NNCs to CNL and had satisfactory result statements from the IAEA. DPWF continued to maintain adequate documentation and submissions regarding the Safeguards and Non-Proliferation SCA to the CNSC.

Performance rating: Satisfactory (SA)

2.4.10 Other Safety and Control Areas

The oversight activities for the following SCAs were similar in 2024 and reached the same conclusions:

- Human Performance Management
- Operating Performance
- Safety Analysis
- Physical Design
- Security
- Packaging and Transport

CNSC staff engaged in continuous oversight as well as other compliance activities, including desktop reviews of submissions, quality manuals and design reports, holding periodic update meetings regarding licensing and compliance ongoings at the site, as well as ensuring compliance through CNL's own event reporting ([Appendix D5](#)). DPWF's performance in these SCAs has remained unchanged in 2024.

Performance rating: Satisfactory (SA)

2.5 Gentilly-1 Waste Facility (G1WF)

2.5.1 Overview

- Licence: 15-year licence granted in 2019
- Licence expiry: 2034
- Licensee: Canadian Nuclear Laboratories
- Location: Bécancour, Québec



Figure 7: Gentilly-1 Waste Facility, outlined in yellow (Source: CNL)

The G1WF, located in Bécancour, Québec within Hydro-Québec's Gentilly-2 site, is a partially decommissioned prototype power reactor (Figure 7). The site is located on the traditional and unceded territory of the Abenaki People and the Wôbanaki Confederacy and the traditional land of the Conseil de la Nation Wendat. The 250 MWe boiling water reactor was put into service in 1972 and shut down in 1984. At G1WF, CNL safely manages low- and intermediate-level radioactive wastes, as well as spent nuclear fuel in concrete dry storage canisters.

In 2024, ongoing hazard abatement and waste characterization activities were undertaken at the G1WF. Asbestos removal was completed in all areas of the Reactor Building except for the reactor upper feeder cabinet. CNL also completed removal of an empty moderator purification system tank and its associated piping, the majority of which was recycled as clean metal.

[Learn more about Gentilly-1 Waste Facility](#)

Table 13: Summary of Safety Control Area performance ratings for G1WF

Safety and control area	Rating
1. Management system	Satisfactory (SA)
2. Human performance management	Satisfactory (SA)
3. Operating performance	Satisfactory (SA)
4. Safety analysis	Satisfactory (SA)
5. Physical design	Satisfactory (SA)
6. Fitness for service	Satisfactory (SA)
7. Radiation protection	Satisfactory (SA)
8. Conventional health and safety	Satisfactory (SA)
9. Environmental protection	Satisfactory (SA)
10. Emergency management and fire protection	Satisfactory (SA)
11. Waste management	Satisfactory (SA)
12. Security	Satisfactory (SA)
13. Safeguards and non-proliferation	Satisfactory (SA)
14. Packaging and transport	Satisfactory (SA)

2.5.2 Radiation protection

The Radiation Protection SCA covers the implementation of a radiation protection program in accordance with the [Radiation Protection Regulations](#). The program must ensure that contamination levels and radiation doses received by individuals are monitored, controlled and

maintained as low as reasonably achievable (ALARA). CNL sites are required to implement and maintain a radiation protection program.

CNSC staff compliance activities confirmed that the facilities and its processes were operated and maintained by CNL in accordance with their licensing basis. For more detailed information on the assessment of this SCA, see the subsections below.

Performance rating: Satisfactory (SA)

2.5.2.1 Application of ALARA

The CNL corporate ALARA process integrates ALARA into the design, planning, management, and control of radiological work activities. In 2024, CNL continued to implement the corporate ALARA process at G1WF to control doses and minimize exposures.

Dose control points (DCPs) are used as a dose management tool for Nuclear Energy Workers' (NEWs) radiological exposures. If a NEW's dose exceeds their assigned DCP by more than 1 mSv, an ALARA assessment is documented to demonstrate that the dose received was justified and optimized, as applicable. In 2024, no NEW exceeded their assigned DCP at G1WF.

2.5.2.2 Worker Dose Control

Radiation exposures of workers at the G1WF site are ascertained, recorded, and monitored to ensure compliance with the CNSC's regulatory dose limits and to maintain radiation doses ALARA. G1WF uses CNL's licensed dosimetry service for external and internal dosimetry for site/facility workers.

Workers, including employees and contractors, conducting work activities which present a reasonable probability that the worker may receive an occupational dose greater than 1 mSv/year are identified as NEWs.

The CNSC's effective dose limit for NEWs is 50 mSv in a one-year dosimetry period. In 2024, the maximum effective dose received by a NEW at G1WF was 0.28 mSv, which was well below the CNSC's effective dose limit.

The CNSC's equivalent dose limit for the skin and for the hands and feet for NEWs is 500 mSv in a one-year dosimetry period. In 2024, the maximum skin dose received by a NEW at G1WF was 0.36 mSv. Extremity dosimeters were assigned to NEWs as dictated by the RP program requirements and based on radiological conditions of the work. In 2024, 23 workers were assigned extremity dosimeters, and the maximum extremity dose recorded was 11.16 mSv. Both results were below the CNSC's equivalent dose limit.

Data on dose to NEWs at G1WF from 2020 to 2024 can be found in [Appendix J5](#).

The CNSC's effective dose limit for persons who are not NEWs is 1 mSv, per calendar year. In 2024, persons not considered as NEWs at the G1WF received no recordable effective doses.

2.5.2.3 Radiation Protection Program Performance

CNSC staff conducted regulatory oversight activities at the G1WF to verify that the radiation protection program complies with CNSC's regulatory requirements. In 2024, CNSC staff conducted 1 inspection at G1WF that included the Radiation Protection SCA which resulted in no NNCs issued to CNL.

Action levels for radiological exposures are established as part of CNL's radiation protection program. If an action level is reached, it triggers G1WF staff to determine the cause and, if applicable, restore the effectiveness of the radiation protection program. In 2024, no action levels were reached.

2.5.2.4 Radiological Hazard Control

Radiation and contamination control programs are established at the G1WF to control and minimize radiological hazards and the spread of radioactive contamination. The radiological hazard surveys conducted in 2024 at the G1WF did not identify any adverse trends and were consistent with expected radiological conditions.

2.5.3 Environmental protection

The CNSC publishes data for annual loadings of radionuclides to the environment from nuclear facilities and this data is available on the [Open Government Portal](#).

In 2024, there were no inspections conducted by CNSC staff at G1WF that included the Environmental Protection SCA.

Based on CNSC staff assessment of G1WF's past performance history and regulatory oversight to date, CNSC staff determined that the Environmental Protection SCA at G1WF meets the applicable regulatory requirements. A detailed summary of G1WF's Environmental Protection performance is provided below.

Performance rating: Satisfactory (SA)

2.5.3.1 Effluent and Emissions Control and Assessment and Monitoring

CNL has implemented and maintains an effluent verification monitoring program at G1WF that meets regulatory requirements. There were no regulatory exceedances related to Environmental Protection in 2024.

CNSC staff reviewed G1WF's 2024 Effluent Verification Monitoring Program (EVMP) results which indicate that:

- this facility continues to have minimal or no airborne radioactivity releases from routine operations and there were no projects at G1WF requiring airborne effluent monitoring
- all liquids from the G1WF sumps were transferred to the Gentilly-2 facility's effluent system to be managed and discharged by Hydro-Québec so there were no liquid effluents discharged to the environment from the G1WF
- there were no regulatory limit exceedances and no reported spills to the environment

CNL has completed a "need-for-monitoring" assessment for airborne and waterborne emissions as part of the CSA N288.5-11, [Effluent monitoring programs at Class I nuclear facilities and uranium mines and mills](#), requirements and determined that there is no need to monitor any effluent streams at G1WF.

2.5.3.2 Environmental Management System

The CNSC requires that licensees develop and maintain an Environmental Management System (EMS) in order to provide a documented framework for integrated activities related to environmental protection. An EMS includes activities such as establishing annual environmental objectives, goals and targets.

CNL has established its corporate level EMS which is part of the CNL's overall Management System and applies to all the CNL sites operated in Canada, including G1WF.

2.5.3.3 Environmental Risk Assessment

CNL had a 2019 Environmental Risk Assessment (ERA) for the G1WF that met CSA N288.6-12 requirements. In 2024, CNL provided a revised ERA in accordance with CSA N288.6-22. CNSC staff reviewed the proposed revised ERA and provided comments to CNL. Subsequently, CNL provided a revision to their original submission to address CNSC's comments. CNSC staff were satisfied that the revision met regulatory requirements.

2.5.3.4 Protection of the Public

In 2024, no members of the public received a radiation dose from G1WF's operations that exceeded regulatory limits. CNL performed an assessment of the need for an environmental monitoring program for the G1WF and CNSC staff reviewed and accepted the assessment. Based on CNL's assessment, there is no need for an environmental monitoring program at G1WF and CNL does not report the dose to the public for this facility.

The effluent monitoring plan assessment conducted by CNL determined that there is minimal or no source of airborne radioactivity from routine operations at G1WF. Additionally, all G1WF liquid releases are discharged through the Gentilly-2 effluent system operated by Hydro-Québec and represent a small fraction of the total releases from the larger Gentilly-2 site. Hydro-Québec's Gentilly-2 facility's environmental monitoring program captures any environmental impacts from the relatively small contribution of G1WF.

2.5.4 Conventional health and safety

As CNL sites are federally regulated, they are subject to the requirements of the [Canada Labour Code](#) and [Canada Occupational Health and Safety Regulations](#). CNL has developed and implemented a program to manage the workplace safety hazards and protect workers on the job while ensuring compliance with the [Canada Labour Code](#) and [Canada Occupational Health and Safety Regulations](#).

A key performance indicator for this SCA is the number of recordable lost-time injuries (RLTI) that occur per year, and the RLTI severity and frequency. Data on number, frequency, and severity of RLTI from 2020 to 2024 are included in [Appendix I](#).

Many activities at CNL sites may be performed by contractors, most of which are provincially regulated, and as such contractors are subject to the provincial requirements. In most cases, contractors performing work at G1WF are subject to their own health and safety programs in accordance with Quebec legislation, which are reviewed and accepted by CNL. Contractor programs must meet or exceed the requirements of CNL's licences.

CNSC staff compliance activities demonstrate that the facilities and activities were operated and maintained by CNL according to their licensing basis. In 2024, CNSC staff conducted 1 inspection that included the Conventional Health and Safety SCA which resulted in no NNCs issued to CNL.

Performance rating: Satisfactory (SA)

2.5.4.1 Performance

A key performance indicator for the Conventional Health and Safety SCA is the number of recordable lost-time injuries (RLTI) that occur per year, and the RLTI severity and frequency. A RLTI is defined as a workplace injury that results in the worker being unable to return to work for a period of time. RLTI severity and frequency provide context to the number of RLTIs. Severity quantifies the number of lost workdays experienced per 100 employees, while frequency quantifies the number of lost-time injuries relative to the number of hours worked.

In 2024, there were no RLTIs at G1WF.

Contractor RLTI data is based on information voluntarily provided to the CNL Health Center by contracting companies and only includes the number of lost time injuring and working days lost. There were no contractor RLTIs in 2024.

2.5.4.2 Practices

When evaluating safety practices at a site, CNSC staff do not distinguish between the licensee's own staff and those of contractors or visitors, considering all to be 'workers' and equally subject to CNSC requirements and licensee policies. This is notable for CNL, as many CNL sites employ contractors to perform a wide variety of tasks. CNL's Improvement Action System is used by CNL to record all events, including injuries, at CNL sites. CNSC staff reviewed CNL's Improvement Action data to determine trends and monitor actions, and determined that CNL's Improvement Action System was satisfactory in 2024.

2.5.5 Human performance management

In 2024, CNSC staff conducted 1 inspection at G1WF that included the Human Performance Management SCA which resulted in no NNCs issued to CNL.

Performance rating: Satisfactory (SA)

2.5.6 Safety analysis

In 2024, CNSC staff did not conduct any inspections at G1WF that included the Safety Analysis SCA. In 2024, CNSC staff reviewed and accepted CNL's revised safety analysis to support the transfer of Gentilly-1 spent nuclear fuel to the CRL site.

Performance rating: Satisfactory (SA)

2.5.7 Waste management

In 2024, CNSC staff conducted 1 inspection at G1WF that included the Waste Management SCA which resulted in no NNCs issued to CNL.

Performance rating: Satisfactory (SA)

2.5.8 Emergency management and fire protection

In 2024, CNSC staff conducted 1 inspection at G1WF that included the Emergency Management and Fire Protection SCA which resulted in 8 NNCs issued to CNL. The NNCs have been grouped into themes and pertained to:

- emergency procedures not identifying all the required equipment, personnel, and radiological support
- requirements to test the implementation of emergency measures not being fully met
- the fire hazard analysis not being maintained
- exit doors not readily able to open
- exit signs not visible or illuminated
- improper storage of combustible material
- improper maintenance of fire extinguishers

The non-compliances issued were deemed low-risk and corrective actions taken by CNL to address these NNCs were acceptable; that the impact on the overall effectiveness of related programs was negligible.

Performance rating: Satisfactory (SA)

2.5.9 Safeguards and non-proliferation

CNSC staff assess CNL's performance in the Safeguards and Non-Proliferation SCA through desktop reviews, reportable events ([Appendix D5](#)), and through the course of inspections ([Appendix C5](#)). Under the terms of the Canadian-IAEA safeguards agreements, the IAEA has the right to perform independent verification activities at sites in Canada, including G1WF. In 2024, there were 2 IAEA-led inspections (CNSC staff accompanied the IAEA on both of the IAEA activities) and 1 CNSC-led inspection at G1WF that included the Safeguards and Non-Proliferation SCA. The CNSC-led inspection resulted in no NNCs and IAEA-led inspections had received a satisfactory result. G1WF continued to maintain adequate documentation and submissions regarding the Safeguards and Non-Proliferation SCA to the CNSC.

Performance rating: Satisfactory (SA)

2.5.10 Packaging and transport

In 2024, CNSC staff conducted 1 inspection at G1WF that included the Packaging and Transport SCA which resulted in no NNCs issued to CNL.

Performance rating: Satisfactory (SA)

2.5.11 Other Safety and Control Areas

The oversight activities for the following SCAs were similar in 2024 and reached the same conclusions:

- Management System
- Operating Performance
- Physical Design
- Fitness for Service
- Security

CNSC staff engaged in continuous oversight as well as other compliance activities, including desktop reviews of submissions, quality manuals and design reports, holding periodic update meetings regarding licensing and compliance ongoings at the site, as well as ensuring compliance through CNL's own event reporting ([Appendix D5](#)). G1WF's performance in these SCAs has remained unchanged in 2024.

Performance rating: Satisfactory (SA)

2.6 Nuclear Power Demonstration Waste Facility (NPDWF)

2.6.1 Overview

- Licence: 15-year licence granted in 2019
- Licence expiry: 2034
- Licensee: Canadian Nuclear Laboratories
- Location: Rolphton, Ontario



Figure 8: Nuclear Power Demonstration Waste Facility (Source: CNL)

The NPDWF is a partially decommissioned prototype power reactor located in Rolphton, Ontario (Figure 8) on the traditional unceded territory of the Algonquin Anishinaabeg Peoples. The 20 MWe prototype CANDU power reactor was placed into service in 1962 and operated until 1987. At NPDWF, CNL safely manages low- and intermediate-level radioactive wastes. Additionally, CNL is undertaking decommissioning planning activities.

[Learn more about Nuclear Power Demonstration Waste Facility](#)

CNL continues to work on the proposal to modify the decommissioning approach for NPDWF from full dismantling to in-situ decommissioning. This application is under review by CNSC staff and is subject to both an [EA](#) pursuant to [CEAA, 2012](#) and a licence amendment. CNL's proposal will be the subject of future Commission decisions on the EA and licence amendment, and as such, it will not be discussed in this report.

Table 14: Summary of Safety and Control Area performance ratings for NPDWF

Safety and control area	Rating
1. Management system	Satisfactory (SA)
2. Human performance management	Satisfactory (SA)
3. Operating performance	Satisfactory (SA)
4. Safety analysis	Satisfactory (SA)
5. Physical design	Satisfactory (SA)
6. Fitness for service	Satisfactory (SA)
7. Radiation protection	Satisfactory (SA)
8. Conventional health and safety	Satisfactory (SA)
9. Environmental protection	Satisfactory (SA)
10. Emergency management and fire protection	Satisfactory (SA)
11. Waste management	Satisfactory (SA)
12. Security	Satisfactory (SA)
13. Safeguards and non-proliferation	N/A
14. Packaging and transport	Satisfactory (SA)

2.6.2 Radiation protection

The Radiation Protection SCA covers the implementation of a radiation protection program in accordance with the [Radiation Protection Regulations](#). The program must ensure that contamination levels and radiation doses received by individuals are monitored, controlled and maintained as low as reasonably achievable (ALARA). CNL sites are required to implement and maintain a radiation protection program.

CNSC staff compliance activities confirmed that the facilities and its processes were operated and maintained by CNL in accordance with their licensing basis. For more detailed information on the assessment of this SCA, see the subsections below.

Performance rating: Satisfactory (SA)

2.6.2.1 Application of ALARA

The CNL corporate ALARA process integrates ALARA into the design, planning, management, and control of radiological work activities. In 2024, CNL continued to implement the corporate ALARA process at NPDWF to control doses and minimize exposures.

Dose control points (DCPs) are used as a dose management tool for Nuclear Energy Workers' (NEWs) radiological exposures. If a NEW's dose exceeds their assigned DCP by more than 1 mSv, an ALARA assessment is documented to demonstrate that the dose received was justified and optimized, as applicable. In 2024, no NEW exceeded their assigned DCP at the NPDWF site.

2.6.2.2 Worker Dose Control

Radiation exposures of workers at the NPDWF site are ascertained, recorded, and monitored to ensure compliance with the CNSC's regulatory dose limits and to maintain radiation doses ALARA. NPDWF uses CNL's licensed dosimetry service for external and internal dosimetry for site/facility workers.

Workers, including employees and contractors, conducting work activities which present a reasonable probability that the worker may receive an occupational dose greater than 1 mSv/year are identified as NEWs.

The CNSC's effective dose limit for NEWs is 50 mSv in a one-year dosimetry period. In 2024, the maximum effective dose received by a NEW at NPDWF was 0.18 mSv, which was well below the CNSC's effective dose limit.

The CNSC's equivalent dose limit for the skin and for the hands and feet for NEWs is 500 mSv in a one-year dosimetry period. In 2024, the maximum skin dose received by a NEW at NPDWF was 0.18 mSv, which was well below the CNSC's equivalent dose limit. In 2024, no extremity dose was recorded at NPDWF. This was due to the radiological conditions of the work having exposures below the radiation protection program requirements for extremity dosimeters to be assigned.

Data on dose to NEWs at NPDWF from 2020 to 2024 can be found in [Appendix J6](#).

The CNSC's regulatory effective dose limit for persons who are not NEWs is 1 mSv, per calendar year. In 2024, persons not considered as NEWs received no recordable effective doses at NPDWF.

2.6.2.3 Radiation Protection Program Performance

CNSC staff conducted regulatory oversight activities at the NPDWF site to verify that the radiation protection program complies with CNSC's regulatory requirements. In 2024, CNSC staff conducted 1 inspection that included the Radiation Protection SCA which resulted in 1 NNC issued to CNL which pertained to missing information on labels of waste containers. CNSC staff determined that the corrective actions taken by CNL to address this NNC were acceptable and thus, the non-compliance did not pose a risk to the health and safety of workers, the public and the environment. This NNC is now considered closed.

Action levels for radiological exposures are established as part of CNL's radiation protection program. If an action level is reached, it triggers NPDWF staff to determine the cause and, if applicable, restore the effectiveness of the RP program. In 2024, no action levels were reached.

2.6.2.4 Radiological Hazard Control

Radiation and contamination control programs are established at the NPDWF to control and minimize radiological hazards and the spread of radioactive contamination. The radiological hazard surveys conducted in 2024 at the NPDWF did not identify any adverse trends and were consistent with expected radiological conditions.

2.6.3 Environmental protection

The CNSC publishes data for annual loadings of radionuclides to the environment from nuclear facilities and this data is available on the [Open Government Portal](#).

CNSC staff assess CNL's performance in the Environmental Protection SCA through desktop reviews, reportable events ([Appendix D5](#)), and through the course of inspections ([Appendix C6](#)). In 2024, CNSC staff conducted 1 inspection at NPDWF that included the Environmental Protection SCA which resulted in no NNCs.

CNL provided rationale for not triggering requirements under CSA N288.4 for NPDWF; thus determining that environmental monitoring programs at these facilities were not required. CNSC staff assessed CNL's information and concluded as such.

Based on CNSC staff assessment of NPDWF's past performance history and regulatory oversight to date, CNSC staff determined that the Environmental Protection SCA at NPDWF meets the applicable regulatory requirements. A detailed summary of NPDWF's Environmental Protection performance is provided below.

Performance rating: Satisfactory (SA)

2.6.3.1 Effluent and Emissions Control and Assessment and Monitoring

CNL has implemented and maintains an effluent verification monitoring program at NPDWF that meets regulatory requirements.

CNSC staff reviewed NPDWF's 2024 Effluent Verification Monitoring Program (EVMP) results which indicate that:

- airborne and liquid releases remained well below their regulatory release limits and DRLs (tritium and gross beta releases to air were less than 0.01% of their DRL; tritium and gross beta releases in liquid effluent were less than 0.01% of their DRL)
- there were no regulatory limit exceedances and no reported spills to the environment

2.6.3.2 Environmental Management System

CNL has established its corporate level Environmental Management System (EMS) which is part of the CNL's overall Management System and applies to all the CNL sites operated in Canada, including NPDWF.

2.6.3.3 Environmental Risk Assessment

In 2023, CNSC staff performed a gap analysis of CNL's NPDWF environmental risk assessment (ERA) documentation against requirements of REGDOC 2.9.1, [Environmental Protection: Environmental Principles, Assessments and Protection Measures](#) and CSA N288.6-22, [Environmental risk assessments at nuclear facilities and uranium mines and mills](#). Following the review, CNSC staff identified gaps regarding formal documentation of a human health risk assessment for hazardous substances as well as an ecological risk assessment for the current storage-with-surveillance state of the facility. In their response letter submitted in September 2024, CNL stated that they currently have an open action to review the ERA documentation for NPDWF by June 2025, for which CNSC staff have accepted the scope and schedule. While completing the committed action to review the existing ERA for the NPDWF, CNL will take into consideration the gaps and comments provided in CNSC staff's ERA gap analysis.

2.6.3.4 Protection of the Public

As part of annual reporting to the CNSC, CNL provides data on dose to a hypothetical member of the public that is representative of someone who spends a considerable amount of time in the proximity to the licensed site.

In 2024, members of the public received no measurable radiation doses from NPDWF's operations. As NPDWF no longer discharges liquid effluents from the Wells Areas Sump, and as

all other releases of radioactive material in NPDWF effluents are a small fraction of their respective regulatory limits, it is CNSC staff's conclusion that the potential impact from NPDWF on the public and the environment is minimal.

2.6.4 Conventional health and safety

As CNL sites are federally regulated, they are subject to the requirements of the [Canada Labour Code](#) and [Canada Occupational Health and Safety Regulations](#). CNL has developed and implemented a program to manage the workplace safety hazards and protect workers on the job while ensuring compliance with the [Canada Labour Code](#) and [Canada Occupational Health and Safety Regulations](#).

A key performance indicator for this SCA is the number of recordable lost-time injuries (RLTI) that occur per year, and the RLTI severity and frequency. Data on number, frequency, and severity of RLTI from 2020 to 2024 are included in [Appendix I](#).

Many activities at CNL sites may be performed by contractors, most of which are provincially regulated, and as such contractors are subject to the provincial requirements. In most cases, contractors performing work at NPDWF are subject to their own health and safety programs in accordance with Ontario legislation, which are reviewed and accepted by CNL. Contractor programs must meet or exceed the requirements of CNL's licences.

CNSC staff compliance activities demonstrate that the facilities and activities were operated and maintained by CNL according to their licensing basis. In 2024, CNSC staff conducted 1 inspection at NPDWF that included the Conventional Health and Safety SCA which resulted in no NNCs issued to CNL.

Performance rating: Satisfactory (SA)

2.6.4.1 Performance

A key performance indicator for the Conventional Health and Safety SCA is the number of recordable lost-time injuries (RLTI) that occur per year, and the RLTI severity and frequency. A RLTI is defined as a workplace injury that results in the worker being unable to return to work for a period of time. RLTI severity and frequency provide context to the number of RLTIs. Severity quantifies the number of lost workdays experienced per 100 employees, while frequency quantifies the number of lost-time injuries relative to the number of hours worked.

In 2024, there were no RLTIs at NPDWF.

Contractor RLTI data is based on information voluntarily provided to the CNL Health Center by contracting companies and only includes the number of lost time injuring and working days lost. There were no contractor RLTIs in 2024.

2.6.4.2 Practices

When evaluating safety practices at a site, CNSC staff do not distinguish between the licensee's own staff and those of contractors or visitors, considering all to be 'workers' and equally subject to CNSC requirements and licensee policies. This is notable for CNL, as many CNL sites employ contractors to perform a wide variety of tasks. CNL's Improvement Action System is used by CNL to record all events, including injuries, at CNL sites. CNSC staff reviewed CNL's Improvement Action data to determine trends and monitor actions, and determined that CNL's Improvement Action System was satisfactory in 2024.

Performance rating: Satisfactory (SA)

2.6.5 Operating performance

In 2024, CNSC staff conducted 1 inspection at NPDWF that included the Operating Performance SCA which resulted in no NNCs issued to CNL.

Performance rating: Satisfactory (SA)

2.6.6 Fitness for service

In 2024, CNSC staff conducted 1 inspection at NPDWF that included the Fitness for Service SCA which resulted in no NNCs issued to CNL.

Performance rating: Satisfactory (SA)

2.6.7 Waste management

In 2024, CNSC staff conducted 1 inspection at NPDWF that included the Waste Management SCA which resulted in no NNCs issued to CNL.

Performance rating: Satisfactory (SA)

2.6.8 Security

In 2024, CNSC staff conducted 1 inspection at NPDWF that included the Security SCA which resulted in no NNCs issued to CNL.

Performance rating: Satisfactory (SA)

2.6.9 Safeguards and non-proliferation

Since this facility is in a partially decommissioned state, the Safeguards and Non-proliferation SCA is not applicable to the NPDWF site. Therefore, no safeguards and non-proliferation activities occurred in 2024.

2.6.10 Other Safety and Control Areas

The oversight activities for the following SCAs were similar in 2024 and reached the same conclusions:

- Management System
- Human Performance Management
- Safety Analysis
- Physical Design
- Emergency Management and Fire Protection
- Packaging and Transport

CNSC staff engaged in continuous oversight as well as other compliance activities, including desktop reviews of submissions, quality manuals and design reports, holding periodic update meetings regarding licensing and compliance ongoing at the site, as well as ensuring compliance through CNL's own event reporting ([Appendix D5](#)). NPDWF's performance in these SCAs has remained unchanged in 2024.

Performance rating: Satisfactory (SA)

3 Consultation and engagement

3.1 Indigenous consultation and engagement

The common-law duty to consult with Indigenous Nations and communities applies when the Crown contemplates actions that may adversely affect potential or established Indigenous and/or treaty rights. The CNSC ensures that all its licence decisions under the NSCA uphold the honour of the Crown and consider Indigenous peoples' potential or established Indigenous and/or treaty rights pursuant to section 35 of the Constitution Act, 1982.

The CNSC is committed to building long-term relationships and conducting ongoing engagement with Indigenous Nations and communities who have an interest in CNSC-regulated facilities within their traditional and/or treaty territories. The CNSC's ongoing Indigenous engagement practices include:

- sharing information and discussing topics of interest with Indigenous Nations and communities;
- seeking feedback and input on CNSC processes;
- responding to issues and concerns;
- collaborating and two-way dialogue on an ongoing basis;
- collaborating on drafting relevant sections of CNSC reports;
- providing opportunities to participate in environmental monitoring through the CNSC's Independent Environmental Monitoring Program (IEMP); and,
- funding opportunities through the CNSC's Participant Funding Program (PFP) to support participation in Commission proceedings and ongoing regulatory activities and build knowledge and capacity through the CNSC's Indigenous and Stakeholder Capacity Fund (ISCF).

Canadian Nuclear Laboratories' sites and facilities fall within the traditional and treaty territories of many Indigenous Nations and communities, as listed in ([Appendix G](#)).

CNSC staff's efforts in 2024 supported the CNSC's ongoing commitment to meet its consultation obligations and build positive relationships with Indigenous peoples with interests in Canadian Nuclear Laboratories sites and facilities. CNSC staff continued to work with Indigenous Nations, communities, and organizations to identify opportunities for formalized and regular engagement throughout the lifecycle of these facilities and welcomed the opportunity to meet with Indigenous Nations and communities to discuss and address topics of interest or concern.

3.1.1 CNSC Indigenous Consultation and Engagement Findings

CNSC staff are satisfied with the level and quality of Indigenous engagement activities conducted by CNL in relation to their operations and proposed projects at different sites in 2024. CNSC staff have confirmed that CNL has Indigenous engagement and outreach programs and is undertaking internal initiatives such as launching their Indigenous Vendor Portal and the Indigenous Business Network in 2024. CNSC staff encourage CNL to continue to remain flexible and responsive to the requests and needs of the Indigenous Nations and communities that have an interest in their sites, facilities and proposed projects.

3.2.15.1 CNSC Engagement Efforts

In 2024, CNSC staff engagement efforts in relation to CNL sites were largely focused on the ongoing Nuclear Power Demonstration Decommissioning Project. Indigenous Nations and communities were also provided updates on ongoing licensed activities at the Douglas Point

Waste Facility, Whiteshell Laboratories, Gentilly-1, Port Hope Project and Chalk River Laboratories sites.

CNSC staff ensured that all Indigenous Nations and communities with a potential interest in CNL's sites, facilities, and activities, were aware of the CNL ROR process and how to get involved. As was done in 2023, the CNSC continued to hold an annual CNL ROR virtual engagement session with Indigenous Nations and communities on December 4th, 2024. There were 10 participants representing approximately 6 Indigenous Nations, communities, and organizations with an interest in CNL sites and the ROR. The goal of the engagement session was to provide an overview of the ROR, CNSC staff's findings with regards to CNL's performance in 2024 as well as discussing and addressing feedback, concerns, comments and recommendations submitted by interested Nations and communities in relation to the 2024 CNL ROR. CNSC staff appreciated the feedback and discussions and worked to include and reflect a number of recommendations in the 2025 CNL ROR. Based on the continued success of these virtual engagement sessions, CNSC staff plan to host another CNL ROR engagement session for the 2024 ROR.

3.2.15.2 CNSC Communications with Indigenous Nations and Communities

In addition to the outreach and engagement sessions, CNSC staff ensured that all interested Indigenous Nations and communities were made aware of the opportunities to review the ROR and submit interventions to the Commission, including the opportunity to intervene orally, as well as opportunities to receive funding through the CNSC's PFP to support their participation in the process. As well, in 2024 CNSC staff continued to keep Indigenous Nations and communities up to date and informed with regards to CNSC staff's regulatory oversight activities at CNL sites including specific meetings on topics of interest, ongoing discussions with regards to responding to and addressing issues, concerns and recommendations raised in their interventions to the Commission. CNSC staff have followed up with each Indigenous Nation and community who intervened with regards to the 2023 CNL ROR and offered to have specific meetings and discussions to address their concerns, comments and recommendations. In response to concerns raised by Indigenous Nations and Communities, CNSC staff has committed to taking the following actions to continue to improve the CNL ROR:

- provide more detailed event descriptions for reportable events.
- provide more information on NNCs arising from inspections.
- include details on the CNSC's oversight strategy on climate change resiliency.
- include an annex summarizing the issues, concerns and requests, and the status of the CNSC's responses/work to address them from intervenors from last year's ROR, including Indigenous Nations and Communities.

- continue working with Indigenous Nations and Communities to address their recommendations in their interventions on the 2023 CNL ROR.
- collaborate with Indigenous Nations and communities whom the CNSC has a Terms of Reference for long-term engagement with on drafting summaries of engagement activities.
- collaborate with Indigenous Nations and communities on summarizing their feedback and perspectives on engagement with CNL in 2024.

For more information on the Terms of Reference engagement summaries and each Nation's perspective on CNSC staff's and CNL's engagement during 2024, please see [Appendix H](#) and section 3.3 on CNL's engagement activities in 2024.

3.2.15.3 Issues and Concerns Tracking

In direct response to the Commission's action [RIB 26782] following the presentation of the 2021 RORs, CNSC staff have established issues and concerns tracking tables for each Indigenous Nation or Community who intervenes in CNSC regulatory processes, including RORs.

These tables capture the requests, concerns and comments included in the interventions in relation to each ROR, or other Commission proceedings as appropriate, from each Indigenous Nation and community. CNSC staff's responses and proposed actions are also included, as appropriate. The tracking tables are shared with each Indigenous Nation and community for validation and discussion in order to make progress on addressing their requests and concerns collaboratively.

CNSC staff have included [Appendix F](#) which provides an overview of issues, concerns and recommendations submitted via intervention by each Indigenous Nation and community. The information presented in [Appendix F](#) is derived from interventions submitted specifically for the 2023 ROR and these conversations carried forward into 2024.

CNSC staff followed up with each Indigenous Nation and community who intervened with regards to the 2023 CNL ROR and offered to have specific meetings and discussions to address their concerns, comments and recommendations. For Indigenous Nations and communities who have a ToR with CNSC, requests, concerns and comments raised in the ROR were further discussed in agreed-upon regular meetings.

CNSC staff have formalized 11 Terms of Reference for long-term engagement with interested Indigenous Nations and communities which have been collaboratively developed with each interested Indigenous Nation or community. A summary of the engagement activities that occurred in 2024 in relation to each of the existing ToRs for long-term engagement is included in [Appendix G](#). These summaries were collaboratively drafted between CNSC staff and each respective Indigenous Nation or community.

The CNSC has existing ToRs with Indigenous Nations and communities with an interest in CNL sites and activities which include: Hiawatha First Nation, Algonquins of Pikwàkanagàn First Nation, Kebaowek First Nation, Curve Lake First Nation, the Mississaugas of Scugog Island First Nation, the Saugeen Ojibway Nation, the Metis Nation of Ontario and the Historic Saugeen Metis. CNSC staff are working on developing and finalizing a number of other ToRs in the coming years with interested Indigenous Nations and communities. CNSC staff remain open to developing ToRs for long-term engagement with other Indigenous Nations and communities interested in CNL sites as appropriate.

3.2.15.4 Engagement on Monitoring Activities

In 2024, CNSC staff have continued to engage and collaborate with Indigenous Nations and communities on the CNSC's Independent Environmental Monitoring Program (IEMP). CNSC staff have made it a priority to ensure that IEMP sampling reflects Indigenous Knowledge, land use, and values, where possible. In addition to IEMP sampling activities, CNSC staff sought input from Indigenous Nations and communities in the 2024 IEMP sampling plans and participated in the sampling process in person alongside CNSC staff.

In advance of the 2024 IEMP sampling campaign around the G1WF, and Port Hope sites, notification emails were sent to Indigenous Nations and communities near the facilities to notify them of the sampling campaigns and to seek input on the applicable sampling plans. CNSC staff invited each interested Nation and community to provide and share Indigenous Knowledge, as well as suggestions for species of interest, valued components, and potential sampling locations where traditional practices and activities may take place.

Representatives from the Curve Lake First Nation and Mississaugas of Scugog Island First Nation joined the sampling team around the Port Hope Conversion Facility site for sampling activities in May 2024; representatives from W8banaki and the Nation Wendat were invited to join sampling activities around the G1WF but declined. CNSC awarded funding through the Indigenous and Stakeholder Capacity Funding (ISCF) to each participating Indigenous Nation and community to support these collaborative efforts on the 2024 IEMP.

As part of the IEMP field work, CNSC staff and the participating Indigenous Nations and communities discussed the IEMP in more detail and related aspects of the CNSC's Environmental Protection Framework. The CNSC's sampling team demonstrated sampling techniques as well as packaging and chain of custody procedures. Participants helped to gather samples of water, soil, sand and vegetation. CNSC staff truly appreciated the engagement, input and participation by the Indigenous Nations and communities in the Port Hope area sampling campaigns and look forward to future collaboration on the IEMP and other sampling initiatives. Once the results are available for each of the sampling campaigns, CNSC staff will work with each Indigenous Nation and community to communicate the results to their respective

leadership and community members, including collaboration on easy-to-read results cards that can be shared with community members. The CNSC is committed to continuing to engage with interested Indigenous Nations and communities with regards to the IEMP, to ensure that sampling plans and activities are reflective of and incorporates Indigenous Knowledge, values and perspectives.

In 2024, CNSC and Environment and Climate Change Canada (ECCC) engaged with participating Indigenous Nations and communities and Environmental Non-Government Organizations (ENGOS) in Phase 1 of the Regional Information and Monitoring Network for the Ottawa River Watershed (RIMNet) Initiative. RIMNet is an independent initiative led by Environment and Climate Change Canada and the CNSC to improve information sharing and documentation regarding the environmental aspects of past, existing and proposed nuclear facilities in the Ottawa River Watershed Basin. RIMNet aims to improve understanding of environmental effects, including effects of past, existing and proposed nuclear facilities.

The Algonquins of Pikwàkanagàn First Nation, Kebaowek First Nation, Kitigan Zibi Anishinabeg, and Ottawa Riverkeeper have been participating in RIMNet. Participants have reviewed and contributed to the Phase I report, which included co-drafting sections, and have been engaged during the current phase. The current phase involves data amalgamation and analysis, and engagement has involved sharing updates on the data process and facilitating ways the RIMNet data can be useful for each nation, community, and organization. CNSC and ECCC are engaging with participants at all stages of RIMNet to ensure a collaborative process and look forward to further collaboration in future phases of the initiative.

3.2.15.5 CNSC Terms of Reference for Long-Term Engagement with Indigenous Nations and communities

CNSC staff have formalized long-term engagement relationships with interested Indigenous Nations and communities through Terms of Reference (ToR) collaboratively developed with each Nation or community. The ToRs and associated work plans, include regular meetings, an accountability and governance structure, specific collaborative activities, as well as topics, facilities, sites, and projects of interest. The CNSC has developed and finalized ToRs for long-term engagement with the following Indigenous Nations and communities with an interest in CNL sites and activities:

- the Algonquins of Pikwakanagan First Nation (AOPFN)
- Mississaugas of Scugog Island First Nation (MSIFN)
- Kebaowek First Nation (KFN)
- Curve Lake First Nation (CLFN)
- Hiawatha First Nation (HFN)
- Saugeen Ojibway Nation (SON)

- Métis Nation of Ontario (MNO)
- Historic Saugeen Métis (HSM)

The CNSC is also working on developing a number of other ToRs in the coming years with interested Indigenous Nations and communities. CNSC staff remain open to developing ToRs for long-term engagement with other interested Nations and communities with nuclear facilities in their territories upon request. A summary of the engagement activities that occurred in 2024 in relation to each of the existing ToRs for long-term engagement with these Nations and communities was collaboratively drafted between CNSC staff and each respective Indigenous Nation or community and can be found in [Appendix G](#).

3.2 Public consultation and engagement

The NSCA mandates the CNSC to disseminate objective scientific, technical and regulatory information to the public concerning its activities and the activities it regulates. CNSC staff fulfill this mandate in a variety of ways, including hosting in-person and virtual information sessions and through annual regulatory reports. Additionally, CNSC staff have responded to or provide CNSC staff's path forward to address and close out specific requests, concerns, and comments raised by Indigenous Nations or communities and intervenors who raised issues or concerns in relation to the 2023 CNL ROR. More details can be found in [Appendix F](#) of this report.

CNSC staff carried out several outreach activities in 2024. Most activities were generic in nature, where CNSC staff were able to engage local community members with information on the role of the nuclear regulator in Canada and the CNSC's oversight of the various CNL sites. Some of these activities were targeted to specific regulatory review and licensing processes underway, including the Near Surface Disposal Facility (NSDF), the WL licence renewal, the G1WF licence amendment, and the spent fuel consolidation project.

3.3 Licensee public information and disclosure

The CNSC requires licensees to maintain and implement public information and disclosure programs (PIDP), in accordance with CNSC's [REGDOC-3.2.1, Public Information and Disclosure](#). These programs are supported by disclosure protocols that include information about what the facility should share with the public, as well as details on how that information is to be disseminated. This ensures that timely information about the health, safety and security of persons and the environment, and other issues associated with the lifecycle of nuclear facilities, is effectively communicated to the public.

CNL's PIDP is a CNL-wide program which covers all licensed nuclear facilities including WL, PHAI, CRL, NPDPWF, DPWF, and G1WF. CNSC staff monitor CNL's implementation of its PIDP to verify that it communicates regularly with its audiences in a way that is open, transparent, and

meaningful to them. CNSC staff also review yearly program updates to verify CNL is taking the community's feedback into consideration and is taking steps to implement program adjustments to meet the evolving needs of the various communities.

In 2024, CNL successfully maintained its PIDP, engaging with interested parties both in person and virtually.

Communications activities conducted by CNL included:

- regularly updating its website with information on each facility/site/project and posting its public disclosure protocol and reportable events, including 4 public disclosures through Community Information Bulletins.
- posting and engaging with audiences on social media, providing information about each facility/site/project.
- providing information including descriptions of current and upcoming work, environmental monitoring reports, project newsletters, Public Disclosures and the Complaint Resolution Program, and the Property Value Protection Program.
- advertising on social media, and in both local and national media outlets.
- sending out information externally to local communities and interested parties via factsheets, newsletters (mailout and online), as well as internally to CNL employees.
- developing and publishing the 2024 CNL Sustainability Report on the website.
- hosting and participating in events, including: open houses, council meetings, career fairs, school presentations, public information sessions, national and international conferences and tradeshow, and webinars. Events included ones that acknowledge and celebrate Indigenous Nations and communities and encourage and promote youth and women in STEM.
- conducting sitewide tours at various facilities/sites for local communities, school groups, interested parties and media as requested.
- conducting surveys and publishing results online, including documents available upon request.
- analysis of the various communication channels, providing further insight into public opinion and the effectiveness of the PIDP regarding CNL and the operations.
- consistent and timely engagement with local and national media, both proactively and in response to requests on topics of public interest. In 2024, CNL produced 28 news releases, 23 related to CRL's ongoing operations, 3 related to WL's ongoing operations, and 2 related to PHAI operations.

Throughout 2024, the NSDF project presented CNL with unique communications challenges and opportunities. CNL was consistent in its approach to media and public inquiries. Other areas of public and media interest included Sanitary Sewage Treatment Facility non-compliance, Actinium-225 production, fusion technology, and the CRL site revitalization.

CNL makes notable efforts to create plain language documents, ensuring that the information is accessible and understandable. Feedback gathered from the public is reflected in CNL products (e.g., infographics, summary documents, video content).

In 2024, CNL conducted 2 self-assessments of its PIDP to verify that the requirements in REGDOC-3.2.1, [Public Information and Disclosure](#) have been appropriately mapped to CNL's program and implementing procedures; and, at CRL and WL to evaluate the implementation of the Public Information Program for Canadian Nuclear Laboratories report. CNL has demonstrated a strong commitment to disseminating appropriate and timely information to the public, community members and the media. CNSC staff found that all CNL sites and facilities followed applicable public information program requirements. CNL distinctly communicates about current projects and is encouraged to continue to do so as those projects evolve.

3.4 Participant Funding Program

The CNSC established the Participant Funding Program (PFP) in 2011 to:

1. enhance individual, not-for-profit organization and Indigenous Nations and Communities participation in the CNSC's environmental assessment (EA) and licensing processes for major nuclear facilities (e.g., uranium mines, nuclear power plants, nuclear substance processing, or nuclear waste facilities)
2. assist individuals, not-for-profit organizations and Indigenous Nations and Communities to bring value-added information to the Commission through informed and topic-specific interventions related to EAs and licensing (i.e., new, distinctive and relevant information that contributes to a better understanding of the anticipated effects of a project)

Further information regarding the Participant Funding Program can be found in [Appendix K](#).

4 Events and other matters of regulatory interest

4.1 Reportable Events

Detailed requirements for reporting unplanned situations or events at CNL licensed sites to the CNSC are referenced in the applicable licence condition handbooks (LCHs). CNSC's REGDOC-3.1.2, [Reporting Requirements, Volume I: Non-Power Reactor Class I Nuclear Facilities and](#)

Uranium Mines and Mills was implemented for applicable CNL sites with the exception of the PHAI. CNSC’s REGDOC-3.1.3, Reporting Requirements for Waste Nuclear Substance Licensees, Class II Nuclear Facilities and Users of Prescribed Equipment, Nuclear Substances and Radiation Devices was implemented for the PHAI. Over the period covered by this report, CNL has complied with the requirements for submission of these reports.

In 2024, CNL submitted 47 reportable events to the CNSC. CNSC staff determined there was no risk to the environment, or the public associated with these events. These events are described in [Appendix D](#).

Table 3: Number of reportable events at each CNL site in the last three years

Facility	2024	2023	2022
Chalk River Laboratories	27*	48	39
Whiteshell Laboratories	11	15	3
Port Hope Area Initiative	8	10	17
Douglas Point WF	1	4	0
Gentilly-1 WF	0	1	0
Nuclear Power Demonstration WF	0	1	0
TOTAL	47	79	59

*CNSC staff received CNL’s reportable event HSSE-24-0139. This event is being tracked under CRL. However, HSSE-24-0139 is applicable to all CNL sites.

CNSC staff confirm that all reportable events were adequately addressed either through closure or an appropriate corrective action plan and did no impact the safety at CNL sites. Events which CNSC staff assess as meeting specific risk criteria are the subject of “Event Initial Reports” from CNSC staff to the Commission. In 2024, there were no events that met the criteria to warrant an Event Initial Report.

4.2 Independent Environmental Monitoring Program (IEMP)

The CNSC requires each nuclear facility licensee to develop, implement and maintain an environmental monitoring program as appropriate to demonstrate that the public and the

environment are protected from any releases to the environment related to the facility's nuclear activities. CNSC staff evaluate and assess the results from these monitoring programs to determine compliance with applicable requirements and limits, as set out in the regulations that govern Canada's nuclear industry.

The Independent Environmental Monitoring Program (IEMP) is independent from a licensee's technical environmental sampling program and is carried out by CNSC staff in publicly accessible areas around nuclear facilities. The CNSC continues to strive to build Indigenous and public trust in the CNSC's regulation of the nuclear industry and has implemented the IEMP to confirm the effectiveness of a licensee's monitoring program and to promote more awareness and information sharing of CNSC's work to protect people and the environment. The IEMP is a regulatory tool that complements and informs the CNSC's ongoing compliance verification program and does not rely on licensees to provide samples. CNSC staff or independent contractors obtain samples from publicly accessible areas around nuclear facilities, measure the amounts of radiological nuclear and hazardous substances present, and then report these amounts to the Commission, Indigenous Nations and communities, and the public.

In 2024, CNSC staff conducted IEMP sampling around CNL's G1WF. Samples of air, water, soil, sediment, sand, vegetation, and food were collected for radioactivity analysis at the CNSC laboratory. There were no results of concern, and the values measured were below available guidelines and our screening levels. Overall, the 2024 IEMP results from around the G1WF site were consistent with those submitted by CNL as part of their environmental monitoring program. The IEMP results add to the body of evidence that supports CNSC staff's assessment that the public and the environment in the vicinity of the facility are protected and that CNL's environmental protection programs are effective.

[Learn more about all IEMP sampling campaigns](#)

4.3 Near Surface Disposal Facility (NSDF)

In March 2017, CNL applied to the CNSC for an amendment to its licence for CRL to authorize the construction of a new Class IB nuclear facility – the near surface disposal facility (NSDF) at the CRL site. On January 9, 2024, the CNSC announced the Commission's decision to amend CNL's nuclear research and test establishment operating licence for CRL to authorize the construction of the NSDF at CRL. The NSDF Project would provide a permanent disposal solution for up to 1 million cubic metres of solid low-level radioactive waste, the majority of which is currently in storage at the CRL site or will be generated from environmental remediation, decommissioning, and operational activities at the CRL site. Approximately 10% of the waste volume will come from other AECL-owned sites or from commercial sources such as Canadian hospitals and universities. The NSDF project includes an engineered containment mound, a wastewater treatment plant, and other support facilities and site infrastructure.

[Read the full record of decision from the Commission](#)

The Commission's decision was then challenged, and 3 judicial reviews have been filed. The Federal Court's decisions were released in February and March 2025. The CNSC and CNL have been directed by the Federal Court to resume consultation with KFN, with a view to implementing the [United Nations Declaration on the Right of Indigenous Peoples Free Prior and Informed Consent](#) standard in a robust manner, a process to be completed on or before September 30, 2026.

More information on the three judicial reviews can be found below:

Kebaowek First Nation v. CNL ([File No. T-227-24](#))

- On February 19, 2025, the Federal Court released its decision partially granting the judicial review, [CNL is appealing the decision](#)

Concerned Citizens of Renfrew County and Area v. CNL ([File No. T-226-24](#))

- On February 20, 2025, the Federal Court released its decision dismissing the judicial review

Kebaowek First Nation v. Canada (Attorney General) ([File No. T-647-24](#))

- On March 14, 2025, the Federal Court released its decision granting the judicial review, [CNL is appealing the decision](#)

Currently, the construction activities have not commenced yet. CNSC staff are responsible for providing ongoing oversight of this project and for ensuring that CNL meets regulatory and safety requirements as it moves forward. This includes ongoing engagement and consultation with Indigenous Nations and communities, stakeholders and the public to ensure that they are kept informed on a regular basis about all NSDF regulatory matters.

The CNSC will ensure that CNL meets all legal and regulatory requirements, as well as its licence conditions, through regular inspections and evaluations.

4.4 Advanced Nuclear Materials Research Centre (ANMRC)

The ANMRC will be a new Class 1B facility at CRL. It will be a modern replacement for aged facilities such as the Universal Cells, Fuel and Material Cells, and various radioisotope laboratories. The licensed activities that will be performed in the ANMRC include those that are already being performed in the facilities that it will replace, with similar types of radiological hazards. The ANMRC is being built using an Integrated Project Delivery (IPD) construction model, with key stakeholders involved in design, fabrication, and construction,

that are part of a multi-party agreement. Under the IDP model, early coordination and planning activities between stakeholders have taken place. Construction activities on the ANMRC commenced in September 2022 and continued through 2024. Activities included the installation of south side structural steel and mass timber, installation of south side rock anchors, commencement on concrete pours for slab on grade of south side concrete, continuation of controlled low-strength material (CLSM) pours on the north side, completion of a hot cell wall mock-up pour using heavy density concrete, installation of underground plumbing for the south side, and completion of south side sub-foundation works. Additionally, off-site, work progressed on hot cell fabrication.

4.4.1 Licensing Basis

In April 2018, CNL was notified of CNSC staff's assessment of the ANMRC project description. CNSC staff concluded that the construction, operation and decommissioning of the ANMRC activities would be within the current licensing basis, and CNL was advised that they could proceed with the design and construction of the ANMRC. This conclusion was predicated on the fact that the ANMRC will consolidate licensed activities already being performed in existing aged hot cells and laboratories housed across several buildings at CRL into one building, as well as the fact that no new activities will be introduced. In April 2018, to ensure that the project remains within the licensing basis, CNL was also advised that it was CNSC staff's expectation that CNL provide regular updates on the status of the project. These updates continue to occur on a semi-annual basis. Additional means of ensuring that the licensing basis is maintained have included reviewing documentation, performing surveillance and monitoring, and conducting inspections.

4.4.2 Activities

CNSC staff have continued to verify compliance with applicable regulatory requirements as the project evolves from conceptual to detailed design to construction. In 2024, submissions reviewed were limited to the engineering change control phase report. In July 2024, the ANMRC was included in surveillance and monitoring at CRL. During this activity significant progress on foundation work was observed. No NNCs associated with the ANMRC were raised in 2024. As the project advances, CNSC staff will continue to monitor CNL's progress and maintain regulatory oversight.

4.5 Modern Combined Electrolysis and Catalytic Exchange Facility (MCECE)

The MCECE Facility will be a new Class IB facility at CRL. It will be a modern replacement for the aged Combined Electrolysis and Catalytic Exchange Upgrading and Detritiation (CECEUD) Test Facility. The licensed activities that will be performed in the MCECE Facility include the detritiation capabilities that are already permitted for the CECEUD Test Facility, with similar overall hazards. Unlike the CECEUD Test Facility, the proposed MCECE Facility design does not include the capability to upgrade heavy water. Once operational, the MCECE Facility will perform production-scale detritiation of Atomic Energy of Canada Limited's (AECL's) legacy inventory of tritium contaminated heavy water, and convert it into 2 reusable products, detritiated heavy water and tritium gas immobilized as titanium tritide. Site preparation activities to support soil remediation work on the site for the proposed MCECE Facility commenced in August 2023, including the installation of secant walls, and dewatering system. In December 2023, CNL posted on the Canadian Impact Assessment Registry a notice of intent to construct the MCECE Facility, thereby commencing the formal public comment period which subsequently closed on January 29, 2024. Atomic Energy of Canada Limited (AECL) is considering all comments received from Indigenous Nations and communities and the public to aid in informing its determination on whether the proposed activities are likely to cause significant adverse environmental effects.

4.5.1 Licensing Basis

In April 2023, CNL was notified of CNSC staff's assessment of the MCECE Facility project description. CNSC staff concluded that the activities associated with the proposed MCECE Facility would be within the current licensing basis and CNL was advised that they could proceed with the design and construction of the MCECE Facility. This conclusion was predicated on the fact that the MCECE Facility would allow for the resumption of detritiation activities previously permitted in the CECEUD Test Facility, as well as the fact that no new activities would be introduced. As one means for CNSC staff to ensure that the project remains within the licensing basis, CNL was advised that it was CNSC staff's expectation that CNL submit safety and regulatory documentation for the facility as the project progresses. Additional means of ensuring that the licensing basis is maintained have included reviewing documentation, performing surveillance and monitoring, and conducting inspections.

4.5.2 Activities

CNSC staff have verified compliance with applicable regulatory requirements as the project progresses. In 2024, submissions reviewed have included the fire hazard assessment and code

compliance review. In July 2024, the MCECE Facility was included in surveillance and monitoring at CRL. During this activity limited site preparation activities were observed. No notices of non-compliance (NNCs) associated with the MCECE Facility were raised in 2024. As the project advances, CNSC staff will continue to monitor CNL's progress and maintain regulatory oversight.

4.6 Actinium-225 Initial Sales Project (Ac-225 ISP)

CNL is proposing to produce Actinium-225 (Ac-225) in the Universal Cells and Fuel Material Cells facility, at the CRL site. The Universal Cells facility houses hot cells used for the remote manipulation of radioactive materials. The facility also has shipping, receiving, and storage areas. The Universal Cells facility has been used in the production of medical isotopes such as Cobalt-60 as a back-up for Molybdenum-99 production. The raw material for Ac-225 production is Radium-226 (Ra-226). The Ra-226 source material will be a combination of Ra-226 contained in legacy nuclear medical waste sources already stored at the CRL site and imported Ra-226. The sources will be recycled into Ra-226 targets in the Universal Cells facility. The targets will be shipped off-site for irradiation, and the irradiated Ra-226 targets shipped back to CRL for further processing in the Universal Cells facility to separate the Ac-225. CNL will then ship the Ac-225 off-site for additional processing into medical products for end users. In 2024, CNL continued performing research and development work to support the Ac-225 Initial Sales Project (ISP).

4.6.1 Licensing Basis

In August 2023, CNL was notified of CNSC staff's assessment of the Ac-225 ISP project description. CNSC staff determined that the activities associated with the Ac-225 ISP were within the current licensing basis and CNL was advised that they could proceed with the modifications to the Universal Cells facility required for the project. This conclusion was predicated on the fact that the Universal Cells facility is authorized for radioisotope process development and medical isotope production. Additionally, CNSC staff determined that CNL's proposed maximum annual production of Ra-226 targets, would be consistent with and within the bounds of what is currently authorized for the Universal Cells facility. As one means for CNSC staff to ensure that the project remains within the licensing basis, CNL is to submit for CNSC review, the suite of documents identified in the licensing plan. As the project matures, CNSC staff will also perform surveillance and monitoring activities, and conduct inspections.

4.6.2 Activities

Compliance activities for Ac-225 ISP were limited in 2024 since the project is still in the early stages. In 2024, the submissions reviewed were the Engineering Change Control Phase Report and Radiological Work Assessment. CNSC staff will continue to conduct compliance verification on documents submitted by CNL. Once commissioning commences, CNSC staff will begin conducting on-site verification and inspection activities.

4.7 Land Lease for Commercial Project Development

CNL is proposing to sublease a parcel of land on the CRL site for commercial project development. The parcel of land CNL is proposing to sublease falls within the CRL site exclusion zone as delineated in the current operating licence. Under the proposal, AECL, owner of the land, will lease the parcel of land to CNL, who in turn will sublease the land. CNL will not be the operator of any potential nuclear facility proposed for the subleased parcel of land; however, a services agreement may be established between CNL and the lessee. For example, CNL may provide services in the areas of security, fire protection, environmental monitoring, emergency preparedness, radiation protection, etc. In 2024 CNL continued to work through the logistics of establishing a sublease and a services agreement to support future commercial project development.

4.7.1 Licensing Basis

In December 2023, CNL was notified of CNSC staff's assessment of the land lease project description. CNSC staff determined that the activities associated with the land lease were outside of the current licensing basis for the CRL site. CNL was advised that a licence amendment would be required to proceed with the proposal. CNL was further advised that once received, CNSC staff would assess the impacts on the programs CNL is required to maintain under its current licensing basis as well as consider the impact on any other areas of regulatory interest that may be affected by a land lease agreement. Various factors informed this conclusion, including the fact that a sublease will impact the land within the exclusion zone, an area which CNL is required to control the use and occupation of as per the current licence.

4.7.2 Activities

In 2024, the project was placed on hold. Should the project recommence, and a formal application be submitted, CNSC staff will assess the impacts on the programs CNL is required to maintain under its current licensing basis.

4.8 Gentilly-1 Fuel Transfer Project

As part of its efforts to decommission the G1WF, CNL submitted a proposal to retrieve and transport the spent nuclear fuel in June of 2023. The goal of this project was to consolidate spent nuclear fuel, currently located at the G1WF, to the Waste Management Area G (WMA G) located at the CRL site. The fuel would be placed in newly constructed and commissioned dry concrete canisters at WMA-G, until a permanent disposal solution becomes available at the Nuclear Waste Management Organizations' (NWMOs') Deep Geological Repository (DGR).

The project proposed retrieving the 88 spent fuel bundles, stored in 11 concrete silos, placing them in approved transport packages, and shipping them via road to CNL's WMA G at the CRL site.

4.8.1 Licensing Basis

In 2024, CNL was notified of CNSC staff's assessment of the G1WF fuel transfer project. CNSC staff determined that the activities associated with the fuel retrieval and storage were within the current licensing basis. The decision to grant CNL the approval to ship spent fuel was predicated on the fact that there would be minimal impact to the health and safety of workers, the public and the environment, as a result of these activities. CNSC staff also concluded that CNL met all of the regulatory requirements in order to ship the fuel safely.

As part of the regulatory approvals required for this project, CNL submitted an updated Facility Authorization (FA), and a Nuclear Safety Note (NSN) for the storage of spent fuel at WMA-G, a safety assessment of the retrieval of the spent fuel from storage at the G1WF, as well as a safety analysis of the transportation package that would be used to ship the fuel. CNL also applied for a license to transport, submitted a transport security plan, as well as obtained agreement from the IAEA to move the spent fuel from the G1WF to the CRL site.

4.8.2 Activities

As per the regulatory requirements, CNL conducted inactive commissioning at the G1WF, which included simulating the work of extracting the fuel from storage, placing it into the transport flask, extracting the fuel from the transport flask, and placing the fuel back into storage in the concrete canisters. Once CNSC staff had reviewed the inactive commissioning results, CNL moved onto conducting active commissioning, where they extracted one of the spent fuel baskets, placed it into the transport flask, and then removed the spent fuel basket to place it back into the concrete canister. CNSC staff were on site to observe active commissioning and to conduct compliance verification activities, as well as to ensure that all safety precautions were being followed.

Once CNSC staff were satisfied that all regulatory requirements were met, CNL was authorized to commence with shipments of the spent fuel. The first shipments departed the G1WF in December 2024, and CNSC staff (including transportation specialists) were on site to conduct compliance verification activities related to this project. CNL completed all shipments from G1WF in July 2025.

4.9 Unique Integrated Test Facility (UNITY-2)

CNL is proposing to utilize its expertise in tritium handling to develop, install and operate a fusion fuel cycle test loop and associated support infrastructure at the CRL site. For this project CNL is collaborating with Kyoto Fusioneering (KF) to assist KF in their development of fusion power plant technology. The system being developed will contain all fusion reactor fuel cycle components, including a lead-lithium eutectic loop where tritium will be stored, a vacuum sieve tray system for extraction of tritium from the lead-lithium eutectic blanket, tritium handling and processing, as well as cooling and ventilation systems. The tritium handling and processing steps will include the removal of tritium from a water stream using a combined electrolysis and catalytic exchange process, tritium removal from a gas stream using an air scrubber, and the capture and storage of the tritium on storage beds. Once complete, CNL plans to make the system available for use by CNL, KF, and other external organizations for component testing.

In 2024, CNL continued to conduct post-operational clean-out activities in preparation for the decommissioning of the Combined Electrolysis and Catalytic Exchange Upgrading and Detritiation (CECEUD) Test Facility to allow for an extension of the Tritium Facility footprint.

4.9.1 Licensing Basis

In July 2024, CNL was notified of CNSC staff's assessment of the UNITY-2 project description. CNSC staff determined that the activities associated with the UNITY-2 project were within the current licensing basis and CNL was advised that they could proceed with the expansion and modification of the current Tritium Facility to support the work associated with the UNITY-2 project. This conclusion was predicated on the fact that the proposed activities are consistent with the operations of the current Tritium Facility, with similar radiation and contamination hazards, and that the proposed project involves tritium levels that fall within the current operational limits and conditions of the facility. As one means for CNSC staff to ensure that the project remains within the licensing basis, CNSC staff advised CNL of CNSC staff's expectations that CNL submit safety and regulatory documentation in accordance with the compliance verification criteria and notification requirements listed in the CRL LCH. As the project matures, CNSC staff will also perform surveillance and monitoring activities, and conduct inspections.

4.9.2 Activities

Compliance activities for UNITY-2 were limited in 2024 since the project is still in the early stages. Submissions reviewed for this project include documents submitted as part of the Licensing Basis Assessment, the Licensing Plan, the Engineering Change Control Phase Report, and the Conceptual Design Description. In November 2024, the future site of the UNITY-2 facility was part of a general inspection conducted by CNSC staff. No notices of non-compliance associated with the UNITY-2 project were raised. As the project advances, CNSC staff will continue to monitor CNL's progress and maintain regulatory oversight.

5 Conclusions

CNSC staff concluded that the CRL, WL, PHAI, DPWF, G1WF, and NPDWF sites operated safely in 2024. This conclusion is based on CNSC staff's assessments of CNL's activities which included inspections, reviews of reports submitted by CNL, and event and incident reviews, supported by follow-up and general communication with CNL.

For 2024, the performance in all SCAs was rated as satisfactory except for the human performance management and emergency management and fire protection SCAs at WL, which were rated as below expectations. CNL has compensatory measures in place for the programs under these SCAs which CNSC staff deem acceptable. CNSC staff continue to maintain regulatory oversight of CNL's progress.

Overall CNSC staff's compliance activities confirmed that:

- radiation protection programs at all CNL sites adequately controlled radiation exposures, keeping doses ALARA
- conventional health and safety programs at all CNL sites continue to protect workers
- environmental protection programs at all CNL sites were effective in protecting people and the environment

CNSC staff will continue to provide regulatory oversight at all CNL sites, to ensure that CNL makes adequate provisions to protect the health, safety and security of workers, Canadians, and the environment, and continues to implement Canada's international obligations on the peaceful use of nuclear energy.

6 Glossary

For definitions of terms used in this document, see [REGDOC-3.6, Glossary of CNSC Terminology](#), which includes terms and definitions used in the [Nuclear Safety and Control Act](#) and the [regulations](#) made under it, and in [CNSC regulatory documents](#) and other publications.

Appendix A: Safety performance rating levels

Satisfactory (SA)

Licensee meets all of the following criteria:

- Performance meets CNSC staff expectations
- Licensee non-compliances or performance issues, if any, are not risk-significant
- Any non-compliances or performance issues have been, or are being, adequately corrected

Below expectations (BE)

One or more of the following criteria apply:

- Performance does not meet CNSC staff expectations
- Licensee has risk-significant non-compliance(s) or performance issue(s)
- Non-compliances or performance issues are not being adequately corrected

Unacceptable (UA)

One or both of the following criteria apply:

- Risk associated with a non-compliance or performance issue is unreasonable
- At least one significant non-compliance or performance issue exists with no associated corrective action

Note: Starting in 2019, facility performance assessment ratings were simplified and the “Fully satisfactory (FS)” was replaced by the “Satisfactory (SA)” rating. It is important to recognize that a facility that received an SCA performance rating of FS in previous regulatory oversight reports and now has a rating of SA, does not necessarily indicate a reduction in performance.

Appendix B: Safety and Control Area Framework

Table B1: High-level definition of each SCA

Functional Area	Safety and Control Area	Definition
Management	Management system	Covers the framework that establishes the processes and programs required to ensure an organization achieves its safety objectives and continuously monitors its performance against these objectives and fostering a healthy safety culture
Management	Human performance management	Covers activities that enable effective human performance through the development and implementation of processes that ensure that a sufficient number of licensee personnel are in all relevant job areas and have the necessary knowledge, skills, procedures and tools in place to safely carry out their duties
Management	Operating performance	Includes an overall review of the conduct of the licensed activities and the activities that enable effective performance
Facility and equipment	Safety analysis	Covers maintenance of the safety analysis that supports that overall safety case for the facility. Safety analysis is a systematic evaluation of the potential hazards associated with the conduct of a proposed activity or facility and considers the

		effectiveness of preventive measures and strategies in reducing the effects of such hazards
Facility and equipment	Physical design	Relates to activities that impact on the ability of systems, components and structures to meet and maintain their design basis given new information arising over time and taking changes in the external environment into account
Facility and equipment	Fitness for service	Covers activities that impact on the physical condition of systems, components and structures to ensure that they remain effective over time. This area includes programs that ensure all equipment is available to perform its intended design function when called upon to do so
Core control processes	Radiation protection	Covers the implementation of a radiation protection program in accordance with the Radiation Protection Regulations . This program must ensure that contamination levels and radiation doses received by individuals are monitored and controlled and maintained ALARA
Core control processes	Conventional health and safety	Covers the implementation of a program to manage workplace safety hazards and to protect workers

Core control processes	Environmental protection	Covers programs that identify, control and monitor all releases of radioactive and hazardous substances and effects on the environment from facilities or as the result of licensed activities
Core control processes	Emergency management and fire protection	Covers emergency plans and emergency preparedness programs which exist for emergencies and for non-routine conditions. This also includes any results of participation in exercises
Core control processes	Waste management	Covers internal waste-related programs which form part of the facility's operations up to the point where the waste is removed from the facility to a separate waste management facility. This area also covers the planning for decommissioning
Core control processes	Security	Covers the programs required to implement and support the security requirements stipulated in the regulations, the licence, orders, or expectations for the facility or activity
Core control processes	Safeguards and non-proliferation	Covers the programs and activities required for the successful implementation of the obligations arising from the Canada / International Atomic Energy Agency (IAEA) safeguards agreements, as well as all other measures arising from the Treaty on the Non-Proliferation of Nuclear Weapons

Core control processes	Packaging and transport	Covers programs for the safe packaging and transport of nuclear substances and radiation devices to and from the licensed facility
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Appendix C: List of Inspections at CNL Sites

Appendix C1: CNSC-led inspections at CRL

Table C1-1: CNSC-led inspections at CRL

Inspection	Dates	SCAs Covered	Number of Notices of Non-Compliance (NNCs)
CNL-CRL-2024-01 General Inspection of Universal Cells at Chalk River Laboratories	February 6-7, 2024	Operating Performance Safety Analysis Environmental Protection Radiation Protection Conventional Health and Safety Emergency Management and Fire Protection Waste Management	2
CNL-CRL-2024-02 Emergency Preparedness and Fire Protection Program Evaluation	February 27-29, 2024	Conventional Health and Safety Emergency Management and Fire Protection	16
CNL- CRL-2024-03 Inspection of the Radiation Protection Program at Chalk River Laboratories	February 26-29, 2024	Radiation Protection Management System	8
CNL-CRL-2024-04 General Inspection of	March 6-7, 2024	Fitness for Service Operating Performance	2

Recycle Fuel Fabrication Laboratory at Chalk River Laboratories		Safety Analysis Environmental Protection Radiation Protection Human Performance Management Conventional Health and Safety Emergency Management and Fire Protection Waste Management	
CNL-CRL-2024-05 Inspection of Management System and Human Performance Management Programs at Chalk River Laboratories	April 15-17, 2024	Management System Human Performance Management	4
CNL-CRL-2024-06 Inspection of the Waste Characterization Program at the Chalk River Laboratories Site	May 14-16, 2024	Management System Waste Management	4
CNL-CRL-2024-07	April 24, 2024	Security	0
CNL-CRL-2024-08 Field Inspection of the Nuclear Fuel Fabrication Facility at Chalk River Laboratories	June 4, 2024	Radiation Protection Emergency Management and Fire Protection Conventional Health and Safety Operating Performance Fitness for Service Safety Analysis	1
CNL-CRL-2024-09 Field Inspection of Fuel Development Laboratories (B300)	June 17, 2024	Waste Management Radiation Protection Conventional Health and Safety Emergency Management and Fire Protection	4

CNL-CRL-2024-10 Field Inspection of the National Research Universal Reactor Facility at Chalk River Laboratories	July 8, 2024	Human Performance Management Operating Performance Safety Analysis Radiation Protection Environmental Protection Conventional Health and Safety Emergency Management and Fire Protection	4
CNL-CRL-2024-11 Field Inspection of the B250 Integrated Response Exercise 2024 at Chalk River Laboratories	June 10, 2024	Emergency Management and Fire Protection	3
CNL-CRL-2024-12 General Inspection of the Waste Management Area C at Chalk River Laboratories	October 8- 10, 2024	Management System Operating Performance Safety Analysis Environmental Protection Radiation Protection Conventional Health and Safety Human Performance Management Emergency Management and Fire Protection Waste Management Security Safeguards and Non- Proliferation	1
CNL-CRL-2024-13 Field Inspection of the Molybdenum-99 Processing Facility at Chalk River Laboratories	October 9, 2024	Management System Human Performance Management Fitness for Service Operating Performance Radiation Protection Environmental Protection Conventional Health and Safety Waste Management Emergency Management and Fire Protection	3

CNL-CRL-2024-14 Field Inspection of Waste Management Area B at Chalk River Laboratories	September 19, 2024	Management System Human Performance Management Fitness for Service Safety Analysis Radiation Protection Environmental Protection Conventional Health and Safety Waste Management Emergency Management and Fire Protection Security	0
CNL-CRL-2024-15 General Inspection at Chalk River Laboratories	November 28-29, 2024	Management System Fitness for Service Operating Performance Radiation Protection Conventional Health and Safety Emergency Management and Fire Protection Waste Management Safeguards and Non- Proliferation	4
CNL-CRL-2024-16 Field Inspection of the Fuels and Materials Cells Facility at Chalk River Laboratories	December 4, 2024	Management System Human Performance Management Fitness for Service Operating Performance Safety Analysis Radiation Protection Environmental Protection Conventional Health and Safety Waste Management Emergency Management and Fire Protection	0
CNL-CRL-2024-17	December 1, 2024	Security	2

Appendix C2: CNSC-led inspections at WL

Table C2-1: CNSC-led inspections at WL

Inspection	Dates	SCAs Covered	Number of Notices of Non-Compliance (NNCs)
CNL-WL-2024-01 Problem Identification and Corrective Action	March 21-28, 2024	Management System	3
CNL-WL-2024-02 Whiteshell General Inspection	March 21-28, 2024	Human Performance Management Operating Performance Radiation Protection Conventional Health and Safety Environmental Protection Emergency Management and Fire Protection Waste Management Packaging and Transport	0
CNL-WL-2024-03 Whiteshell General Inspection	April 22-25, 2024	Management System Human Performance Management Operating Performance Safety Analysis	0
CNL-WL-2024-04 Whiteshell Fire Response Drill	April 22-25, 2024	Emergency Management and Fire Protection	3
CNL-WL-2024-05 Whiteshell General Inspection	June 24-27, 2024	Management System Human Performance Management Operating Performance Radiation Protection Conventional Health and Safety Emergency Management and	4

		Fire Protection Waste Management	
CNL-WL-2024-06 Baseline Fitness for Service Inspection at Whiteshell	August 19- 22, 2024	Management System Human Performance Management Fitness for Service	5
CNL-WL-2024-07 Emergency Management and Fire Protection Training	December 2-5, 2024	Management System Human Performance Management Emergency Management and Fire Protection	6
CNL-WL-2024-08	July 18, 2024	Security	0

Appendix C3: CNSC-led inspections at PHAI

Table C3-1: CNSC-led inspections at PHAI

Inspection	Dates	SCAs Covered	Number of Notices of Non- Compliance (NNCs)
CNL-PHAI-WMP-2024-01 Port Hope Area Initiative - Management System	January 29 - February 2, 2024	Management System	3
CNL-PHAI-WMP-2024-02 General Inspection of Small Scale Remediation Activities	March 25- 26, 2024	Conventional Health and Safety Radiation Protection Emergency Management and Fire Protection Environmental Protection Packaging and Transport	2

CNL-PHAI-WMP-2024-03 General Inspection of PHAI Project Remediation Activities	August 13-16, 2024	Physical Design Fitness for Service Conventional Health and Safety Emergency Management and Fire Protection	2
CNL-PHAI-WMP-2024-04 Port Hope Area Initiative Project Radiation Protection Inspection	September 10-13, 2024	Radiation Protection	0
CNL-PHAI-WMP-2024-05 Port Hope Area Initiative Project Environmental Protection Inspection	September 10-13, 2024	Environmental Protection	0

Appendix C4: CNSC-led inspections at DPWF

Table C4-1: CNSC-led inspections at DPWF

Inspection	Dates	SCAs Covered	Number of Notices of Non-Compliance (NNCs)
CNL-DP-2024-01 General Inspection with Focus on Emergency Management and Fire Protection	September 4-5, 2024	Conventional Health and Safety Emergency Management and Fire Protection Radiation Protection Fitness for Service Management System Environmental Protection	6

Appendix C5: CNSC-led inspections at G1WF

Table C5-1: CNSC-led inspections at G1WF

Inspection	Dates	SCAs Covered	Number of Notices of Non-Compliance (NNCs)
CNL-G1-2024-01 Packaging and Transport Inspection for the Spent Fuel Consolidation Project	December 3-11, 2024	Packaging and Transport Radiation Protection Conventional Health and Safety Human Performance Management Waste Management Safeguards and Non-Proliferation	0
CNL-G1-2024-02 Emergency Preparedness and Fire Protection Program	November 18-19, 2024	Emergency Management and Fire Protection	8

Appendix C6: CNSC-led inspections at NPDWF

Table C6-1: CNSC-led inspections at NPDWF

Inspection	Dates	SCAs Covered	Number of Notices of Non-Compliance (NNCs)
CNL-NPD-2024-01 CNSC Compliance Inspection at NPDWF	August 14, 2024	Fitness for Service Operating Performance Environmental Protection Radiation Protection Conventional Health and Safety Waste Management Security	0

Appendix C7: IAEA-led inspections at CNL Sites

Table C7-1: IAEA-led inspections at CNL Sites

Inspection	IAEA Inspections (CNSC Escort)
Chalk River Laboratories	62 (36)
Whiteshell Laboratories	2
Port Hope Area Initiative	2 (2)
Douglas Point Waste Facility	2
Gentilly-1 Waste Facility	2
Nuclear Power Demonstration Waste Facility	N/A
Total	70 (38)

Appendix D: Reportable Events

This Appendix contains information on the number of reportable events at the CNL sites covered by this ROR in the 2024 calendar year. CNL is required to report events as per the [*General Nuclear Safety and Control Regulations*](#), and, if applicable, to the site, the criteria outlined in CNSC REGDOC-3.1.2, [*Reporting Requirements, Volume I: Non-Power Reactor Class I Nuclear Facilities and Uranium Mines and Mills*](#) or CNSC REGDOC-3.1.3, [*Reporting Requirements for Waste Nuclear Substance Licensees, Class II Nuclear Facilities and Users of Prescribed Equipment, Nuclear Substances and Radiation Devices*](#). A total of 47 events were reported to and assessed by CNSC staff in 2024. CNSC staff, determined that there was no risk to the environment, nor the public associated with these events. These events are described in the tables below.

Appendix D1: Reportable events for CNL sites

Table D1-1: Reportable events for CNL sites

Facility	Number of events
Chalk River Laboratories	27*
Whiteshell Laboratories	11
Port Hope Area Initiative	8
Douglas Point Waste Facility	1
Gentilly-1 Waste Facility	0
Nuclear Power Demonstration Waste Facility	0
Total	47

*CNSC staff received CNL's reportable event HSSE-24-0139. This event is being tracked under CRL however HSSE-24-0139 is applicable to all CNL sites.

Appendix D2: Reportable events at CRL

Table D2-1: Reportable events at CRL

Event Number	Title	Event Summary	SCA
ERM-24-0124	Minor Bunker "C" Oil Leak	CNL reported that while unloading Bunker "C" oil at the Building 420 unloading station, the attending Operating Engineer noticed a small amount of oil escaping the suction piping at an unidentified rupture.	Environmental Protection Emergency Management and Fire Protection
HSSE-24-0139	Lapses in Radiation Protection Group 3 and Group 2 training without notification of expiry by the Learning Management System.	CNL's electronic learning management system was not properly configured to notify CNL managers and supervisors of upcoming training requirements, in advance of expiration. CNL identified over 400 employees with expired Radiation Protection training.	Human Performance Management Radiation Protection
HSSE-23-3864	Criticality Drill in B375 - Potential Deficiency in Alarm Signals	During a criticality accident drill that was performed for the Recycle Fuel Fabrication Laboratory (RFFL), it was found that the occupants of building 380 took too long to evacuate upon actuation of the Criticality Accident Alarm System (CAAS), and that the signal generated by the RFFL CAAS is an intermittent klaxon, which is the same signal as the high radiation alarm in the Fuels and Materials Cells (FMC) Facility. It was discovered that there is no automatically actuated alarm in adjacent buildings that require evacuation when the CAAS actuates.	Safety Analysis Emergency Management and Fire Protection

Event Number	Title	Event Summary	SCA
ERM-24-0421	Fire Alarm Unplanned Impairment - No Alarm Initiation	During CNL's monthly fire inspection of building 595, it was noted that multiple manual pull fire alarms were not sounding the building fire alarm. The cause of the failure was determined to be an issue with the Bell line between buildings. A tech cable was installed as a temporary measure, with the main line being replaced later.	Emergency Management and Fire Protection
ERM-24-0738	B422 Fire Dispatched to Switchyard	A heat tracing cable in a transformer containment put at building 422 came into contact with a waste bag and began thermolysis of the plastic bag. The smell of smoke was initially discovered by an electrician during completion of routine hourly checks on the transformer drain valve.	Emergency Management and Fire Protection
HSSE-24-0829	CRL Loss of Class IV Power Resulting in Elevator Rescue and Fire Alarm Activation	On February 26, the CRL site experienced a Class IV power loss lasting 31 minutes, due to an external Hydro One issue. The power loss resulted in the CRL Fire Department responding to 2 simultaneous events caused by the outage which included a staff member stuck in a stopped elevator, and a staff member pulling an alarm after smelling burnt rubber from a non-functioning fan belt.	Emergency Management and Fire Protection
ERM-24-1398	Unplanned Fire Alarm Impairment – B227 Loss of Alarm Communication	On April 18 it was discovered there was a communication error with the building 227 fire alarm system. A 4-hour building condition assessment was implemented until the impairment was fully resolved.	Emergency Management and Fire Protection
HSSE-24-1523	Security Non-Compliance with Measures Described in	Details of this event are confidential.	Security

Event Number	Title	Event Summary	SCA
	CRL Licence Documents		
ERM-24-1505	Package Received at Chalk River With Higher Than Expected Radiation Level	CNL received a shipment from an external client due to be emplaced in waste management area B. The packages were labelled with a yellow II transport label but upon receiving the package, CNL discovered that the near-contact readings were higher than expected. A safe back out was performed and the external client was notified. No additional dose to workers was received.	Packaging and Transport Waste Management
HSSE-24-1647	Unregistered radioactive source identified in B109	An unregistered radioactive source was discovered in building 109, the NRU stack effluent monitoring building, in some out-of-service effluent monitoring equipment. The source was registered and a leak test performed. The source was found to not be leaking.	Radiation Protection
S&T-24-1683	Visitors Left Unescorted in inner area	Details of this event are confidential.	Security
HSSE-24-1810	Experiment Involving Oven Results in Building Evacuation Due To Smoke	A building occupant noticed smoke from an experimental oven. The occupant turned off the oven, activated the fire pull station, and then called the emergency line to report the details of the event.	Emergency Management and Fire Protection
ERM-24-1731	P-10 Gas Bottle Inadvertently Vented	During maintenance activities the valve of a compressed gas cylinder was inadvertently actuated.	Emergency Management and Fire Protection

Event Number	Title	Event Summary	SCA
CTA-24-1996	Non-compliance with reporting requirements for CNL's Land Use and Occupation	CNL updated the compliance verification criteria document CRL Outer Area Plant Boundary Monuments Property Plan and forgot to submit it to the CNSC at the time of change as required by Licence Condition G.3: Land Use and Occupation in the CRL Licence Conditions Handbook.	Management System
CTA-24-2091	Unplanned Fire Alarm Impairment - B703 Communication Failure	A network failure resulted in Building 703 alarm panel failing to communicate with the Central Alarm and Control Facility.	Emergency Management and Fire Protection
HSSE-24-2147	B539 Criticality Alarm Activation	A faulty detector caused the Criticality Accident Alarm System to activate resulting in the CRL site stay-in sirens activating as well as an automatic Emergency Operations Centre activation.	Safety Analysis Emergency Management and Fire Protection
S&T-24-2244	Package of Natural Uranium chips and granules stored in ZED-2; this form of material not allowed under CSD-37	Natural uranium carbide waste (chips and powder) from a previous experiment were found stored in the ZED-2 reactor facility since 2000, which is not an allowable form of fissionable material as per the facility Criticality Safety Document. CNL moved the material to an approved storage location outside of the facility.	Safety Analysis
ERM-24-2747	Field Services Assistant Felt Unwell and had Hard Time Breathing	A CNL employee was working in Building 227 removing Asbestos Containing Material transite board. They were wearing a tyvek suit, gloves, CSA footwear and a respirator. After approximately 5 minutes of field marking the leftover transite, they left the	Conventional Health and Safety

Event Number	Title	Event Summary	SCA
		temporary ventilated enclosure for a break. Thirty minutes later they returned to the area, but he began to feel unwell and had a hard time breathing.	
ERM-24-2856	Worker Falls Down from a Step	Workers inside a Temporary Ventilated Enclosure (TVE) were pausing work for their lunch break. The Radiation Protection worker outside of the TVE donned Personal Protective Equipment for the exit/undress task and opened the door to enter the TVE anteroom. They did not notice the single 6" step down just inside the door and stumbled and fell to the floor.	Conventional Health and Safety
ERM-24-2998	Fire Alarm Impairment affecting two buildings	During decommissioning work, staff removed Class III & IV power from the building, reverting the building to a decommission and demolition state. During the programming phase of the work plan, Fire Technicians were notified by Security Technicians that Loop 6 was appearing as disconnected on the Open Graphic Navigator (OpenGN) at the Security Advisory System (SAS) monitoring console. CNL began troubleshooting the programming file and determined that the wrong text file had been sent to Security Technicians which still included Building 138, resulting in communication failures on fire alarm panels and what was assumed to have contributed to the loop connection failure. The problem was fixed, however, it was still indicating a connection failure on OpenGN at the SAS monitoring console. CNL Fire and Security Technicians were unable to determine the cause of the connection failure. In consultation with the on-call Fire Systems Specialist, compensatory measures were	Emergency Management and Fire Protection

Event Number	Title	Event Summary	SCA
		determined and implemented for overnight monitoring. A continuous Building Condition Assessment was implemented by CRL Fire Department personnel to monitor. Due to the significance of the impairment, Fire and Security Technicians were requested to return to the site to continue troubleshooting the impairment. CNL was unable to determine the source of the issue. It was discovered that the program for the designated Master Panel 96 was non-functional. It was rebooted and that fixed the issue. The Fire Technicians proceeded to verify alarm function for the fire alarm panels on Loop 6 and confirmed it was restored.	
BUS MGMT- 24-3202	LPCE catalyst shipped to Commonwealth Fusion Systems (CFS) USA	CNL's Export/Import Compliance group was notified that a shipment of hydrogen isotope exchange catalyst had been shipped to a company in the United States. It was identified that this shipment had been exported without the required CNSC permit, triggering a reportable event.	Safeguards and Non-proliferation
S&T-24- 3030	Worker injured while helping lift cart, over the door sill to enter a building	While assisting a Radiation Surveyor in moving the charcoal testing cart, a Nuclear Operator injured muscles in their right arm. The cart was being brought into building 229 which has an eight-inch door sill. Both workers were inside the doorway lifting one end of the cart (weighing approximately 220 lbs in total) over the lip, when one worker felt a sudden pain in their right arm.	Conventional Health and Safety
ERM-24- 3323	Broken IAEA Seal Discovered During Physical Inventory	While retrieving safeguarded waste packages from a Waste Management Areas storage facility as part of the International Atomic Energy Agency Physical Inventory Verification, an IAEA seal was found to be broken. The placement of the IAEA seal on	Waste Management

Event Number	Title	Event Summary	SCA
	Verification Activities	the B-25 showed that the seal cable was pinched against the sealing flange, resulting in the seal's breakage.	
ERM-24-3410	Fixed System Impairment	The on-call Fire Systems Specialist was contacted regarding a trouble alarm initiated in building 508 for the fixed suppression system releasing panel.	Emergency Management and Fire Protection
ERM-24-3657	RAM Transport - Incorrect Package Used for Shipment of Samples	While reviewing shipping paperwork for a shipment in progress from CRL to a FedEx depot in Ottawa, a TDG Program Officer at CRL discovered that a shipment of radioactive liquid samples being sent to the USA was classified as a Type A shipment. The samples were packaged in a 5-gallon drum rated as Type A for Solids and only IP-2 for liquids, not Type A for liquids. The cause was determined to be a failure to verify that the Type A packaging selected was suitable for transporting the Class 7 liquids.	Packaging and Transport
BUS MGMT-24-3814	Overheated Brake on Contractor Float Causes Small Fire	A contractor truck pulling a float trailer pulled off on Plant Road near Building 1565 prior to entering through the outer gate when they noticed smoke coming from the rear of the float trailer. Two off-duty firefighters used a fire extinguisher from the truck to extinguish the fire.	Emergency Management and Fire Protection
S&T-24-4032	HPNG Facility Authorization Incorrectly Credits Getter Valve as a Safety Mechanism	At the Health Physics Neutron Generator (HPNG) Class II nuclear facility, the operator unknowingly operated the Deuterium-Tritium neutron generator with the getter valve closed and in the operating state, and produced neutrons. The HPNG Facility Authorization indicates that neutrons can only be produced when the getter valve is open and in the operating state. When the	Operating Performance

Event Number	Title	Event Summary	SCA
		neutron generator is in the shutdown or stand-by state, the getter valve is closed, and this should prevent accidental neutron production. The device manufacturer indicated that neutrons can be produced when the getter valve is closed, contrary to the information in the Facility Authorization and facility safety testing procedures.	

Appendix D3: Reportable events at WL

Table D3-1: Reportable events at WL

Event Number	Title	Event Summary	SCA
HSSE-24-0565	WL B401 Fire Alarm Activation Due to Microwave Oven Electrical Malfunction	While a microwave was in use there was an electrical malfunction resulting in smoke which activated a smoke detector and building fire alarm. The microwave was immediately de-energized and the fire department was dispatched following activation of the fire alarm system.	Emergency Management and Fire Protection
HSSE-24-0757	WL - Response to small propane leak	A faint smell of propane was observed on the propane tank farm by a worker conducting a daily inspection. WL Fire Department initiated a response of the on-duty crew.	Emergency Management and Fire Protection
CTA-24-1914	Failure to provide notification at time of implementation for qualification and appointment of chief nuclear officer, facility	A document was revised and published without notification to CNSC staff, contrary to the Licence Conditions Handbook.	Management System

Event Number	Title	Event Summary	SCA
	authorities and managers		
HSSE-24-2043	Security Non-Compliance with Nuclear Security Regulations	Details of this event are confidential.	Security
HSSE-24-2624	WL Non-iCAM Air Monitors Pump/Rotameters Not Meeting Radiation Protection Regulations	As follow-up to a CNSC inspection, it was determined that some components that support airborne contamination monitoring at WL did not comply with the <i>Radiation Protection Regulations</i> . These instruments were used as part of CNL's defense-in-depth, and results from these instruments were not solely used for making decisions on the health and safety of personnel and the environment. This was not considered to be safety significant.	Radiation Protection
ERM-24-3029	WL: Legacy Unplanned Fire System Impairment – WMA Fire Water Supply	The provision of firewater at the WL Waste Management Area was deemed to be insufficient due to the unreliable water sources and site fire response capabilities. To address these issues in a timely manner, a temporary 15,000-gallon water tank was purchased and installed to provide an interim fire water supply.	Emergency Management and Fire Protection
ERM-24-3386	WL Fire Alarm System Unplanned Impairment	During monthly fire alarm testing, the fire alarm panel in building 100 displayed a network initialization error.	Emergency Management and Fire Protection
ERM-24-3461	WL ENVP: Action Level (AL) exceedance at the Building 422 Outfall Station for	There was a pH Action Level exceedance for the month of September 2024, for the effluent monitored in the Building 422 Outfall Monitoring Station. CNL uses the monthly average to formally report against	Environmental Protection

Event Number	Title	Event Summary	SCA
	pH for September 2024	the Action Level, and the monthly average for September was 6.49 and , the acceptable range for pH Action Level is 6.6-8.9. All of September's weekly composite sample readings remained below the Action Level. CNL took immediate actions and has committed to update Intake and Outfall Water Sampling Procedure and implement a new sampling location on the Winnipeg River (B902 Site Intake)..	
HSSE-24-3847	WL Unplanned Impairment of Fire Alarm System Communication	Verification was missed prior to returning the fire alarm panel to fully operational status when conducting annual fire alarm system testing. The Fire alarm panel was left in bypass mode which bypassed alarm signals to the to the Security Monitoring Room and may have impacted local alarms.	Emergency Management and Fire Protection
HSSE-24-3884	WL Unplanned Impairment of B300 Heat Detector	Due to ongoing roof repairs, a heat detector was exposed to water that leaked through the roof, causing the detector to alarm. The fire department responded and confirmed the location of the activated detector and that there was no visible smoke or fire.	Emergency Management and Fire Protection
HSSE-24-4245	WL ENVP: Action Level (AL) exceedance at the Building 422 Outfall Station for pH for November 2024.	For November 2024, the monthly average pH of the effluent was 6.35; the Action Level pH acceptable range is 6.6-8.9. CNL concludes that there were no environmental impacts on the Winnipeg River, aquatic life or the public as a result of this pH action level exceedance of the Outfall effluent. CNSC staff assessed the information and given the scope of the event had minimal impact to the environment and the public, CNSC staff determined that they are satisfied with the	Environmental Protection

Event Number	Title	Event Summary	SCA
		corrective actions taken and the further actions committed to be taken by CNL.	

Appendix D4: Reportable events at PHAI

Table D4-1: Reportable events at PHAI

Event Number	Title	Event Summary	SCA
ERM-24-0122	PH LTWMF – EMS Called for Personal Medical Event	A worker was feeling unwell and lost consciousness in the office.	Emergency Management and Fire Protection
ERM-24-0311	PH WWTP – Chemical and Process Water Exposure to Worker	A maintenance worker was performing a non-routine task in response to an operational issue. The worker was addressing a plugged process line on a new acid injection system that was not yet in service when a splash of process water and sulphuric acid occurred and resulted in limited exposure to the skin of the worker.	Conventional Health and Safety Waste Management
ERM-24-0640	HWP –PH LTWMF – Trespass Event	A security contractor observed an unknown individual trespassing on site. No damage or theft was observed to have occurred on the site.	Security
ERM-24-1725	HWP – Port Hope Harbour Centre Pier (PH HCP) – Worker Lost Consciousness	A subcontractor worker fainted and momentarily lost consciousness.	Emergency management and fire protection

Event Number	Title	Event Summary	SCA
ERM-24-2095	HWP – HDLF – Plastic Replica of Ordinance Device Uncovered at Highland Drive Landfill	At the Highland Drive Landfill (HDLF) remediation site, while excavating municipal solid waste from the southeast corner of the work area, an excavator operator observed what appeared to be a hand grenade in the excavator bucket. The grenade was ultimately concluded to be a plastic replica.	Emergency management and fire protection
ERM-24-3115	HWP – Task Order 2 – 34 Bramley St. Foundation Collapse	A portion of the foundation of an addition to a home on Bramley Street failed and collapsed into the adjacent excavation radiological protection zone 3.	Emergency management and fire protection
ERM-24-3577	HWP – PH LTWMF Precautionary Ambulance Call	A worker reported feeling generally unwell in relation to a pre-existing medical condition.	Emergency management and fire protection
ERM-24-3811	HWP –TO2 Skid Steer Contacted Hydro Pole – No Injuries	A worker was operating a skid steer with a power rake during remediation activities. While reversing, the skid steer contacted a hydro pole. As a result, the pole leaned over the adjacent Hayward Street and power was lost at the neighbouring Port Hope Area Initiative work site.	Emergency management and fire protection

Appendix D5: Reportable events at DPWF, G1WF, NPDWF

Table D5-1: Reportable events at DPWF, G1WF, and NPDWF

Event Number	Title	Event Summary	SCA
HSSE-24-0904	Loss of Protected Area Security Measures at Douglas Point	Details of this event are confidential.	Security

Appendix E: Significant changes to CNL licences and Licence Condition Handbooks

Appendix E1: Canadian Nuclear Laboratories

Table E1-1: Significant changes to licence bases of CNL sites

Facility	Licence/Licence Condition Handbook number	Description of change	Revision number	Revision date
Chalk River Laboratories	NRTEOL-01.01/2028	Licence amended to add licence conditions associated with the Near Surface Disposal Facility at CRL	01	January 8, 2024
Chalk River Laboratories	NRTEOL-LCH-01.01/2028	LCH updated to reflect changes to authorize the construction of the Near Surface Disposal Facility at CRL to add the	04	January 31, 2024

		associated compliance verification criteria		
Chalk River Laboratories	NRTEOL-LCH-01.01/2028	LCH updated to reflect changes occurring at CRL to reflect current versions of compliance verification criteria publications and documents	05	October 31, 2024
Whiteshell Laboratories	NRTEDL-LCH-08.00/2027	New LCH document to accompany new licence	00	January 1, 2025
Whiteshell Laboratories	NRTEDL-08.00/2027	Licence renewal	00	January 1, 2025

Appendix F: Status of issues, concerns and requests from intervenors

In response to the Commission’s action from the 2021 RORs, CNSC staff has established an internal CNSC issues, concerns, and comments tracking table for each intervening Indigenous Nation or Community in the 2023 CNL ROR. These tables also summarize and track CNSC’s efforts to respond to and address intervenor requests concerns and comments, where feasible.

The purpose of this appendix is to provide a summary of information and data from the CNSC’s issues tracking tables to the Commission. The tables below provide an overview of the issues raised in interventions in relation to the previous year’s ROR, and the proposed path forward to address them. [Table F-1](#) outlines the number of specific issues and concerns raised by each intervening Indigenous Nation and community and their related themes, as well as CNSC responses and proposed path forward. [Table F-2](#) provides an overview of the key thematic categories raised by each intervening Indigenous Nation and community and the total number of times each theme or topic was raised by all intervenors in their interventions. Tracking this thematic information will provide a baseline to help direct CNSC staff to focus their efforts on future engagements and consultations to areas that generate the most concerns.

The following table provides details regarding the number of specific issues and concerns raised in the interventions by Indigenous Nations and communities in relation to the 2023 CNL ROR, the number of thematic categories the issues and concerns are grouped by, and the status of the CNSC’s approach to responding to and addressing each issue, concern or request raised in the interventions to date.

CNSC staff are committed to responding to and following up with the intervenors below with regards to their interventions and working collaboratively to identify options for a path forward to address the comments, where possible. For Indigenous Nations and communities that have a terms of reference (ToR) for long-term engagement with the CNSC, requests, concerns and comments raised in relation to the ROR have been integrated into the engagement work plan and regular meetings with each Indigenous Nation or community, including sharing the specific issues and concerns tracking table with each Indigenous Nation and community in order to verify the data and discuss a path forward for meaningfully addressing their comments.

In addition, CNSC staff have also followed up with Indigenous Nations and communities who the CNSC does not currently have a ToR for long-term engagement with, in order to follow up on or set a path forward on their comments and issues.

Table F-1: Issues and Concerns Raised in Interventions from Indigenous Nations and Communities from the 2023 CNL ROR Tracking and Response Table

2023 CNL ROR Interventions from Indigenous Nation and Communities	The number of Requests/ Concerns/ Comments Raised in 2023 ROR intervention	Requests/ Concerns/ Comments Responded to by CNSC staff*	Notes
Algonquins of Pikwàkanagàn First Nation	20 (Across 7 categories)	20	The issues, concerns and recommendations raised by AOPFN in their intervention for the 2023 CNL ROR are being addressed and discussed with AOPFN through an issues tracking table maintained by CNSC staff, as well as through regular meetings as part of AOPFN and CNSCs TOR and engagement work plan. CNSC staff reached out to the AOPFN to offer to have a specific meeting and discussions to address their concerns, comments, and recommendations in relation to the 2023 CNL ROR. CNSC staff looks forward to working with AOPFN to address their comments and recommendations. The themes of the issues and concerns raised span from environmental monitoring, CNSC funding programs, the incorporation of Indigenous Knowledge into the RORs and more.
Manitoba Métis Federation	8 (Across 10 categories)	8	The issues, concerns and recommendations raised MMF in their intervention for the 2023 CNL ROR are being addressed and discussed with MMF through an issues tracking table maintained by CNSC staff. CNSC staff reached out to the MMF to offer to have a specific meeting and discussions

			to address their concerns, comments, and recommendations in relation to the 2023 CNL ROR. CNSC staff looks forward to working with MMF to address their comments and recommendations. The themes of the issues and concerns raised span from environmental risk assessments, consultation and engagement and more.
Kebaowek First Nation	5 (Across 3 categories)	5	The issues, concerns and recommendations raised by KFN in their intervention for the 2023 CNL ROR are being addressed and discussed with KFN through an issues tracking table maintained by CNSC staff. CNSC staff reached out to the KFN to offer to have a specific meeting and discussions to address their concerns, comments, and recommendations in relation to the 2023 CNL ROR. CNSC staff looks forward to working with KFN to address their comments and recommendations. The themes of the issues and concerns raised span from impacts to rights, consultation and engagement and more.
Chippewas of Kettle and Stony Point First Nation	18 (Across 9 categories)	18	The issues, concerns and recommendations raised by Chippewas of Kettle and Stony Point First Nation in their intervention for the 2023 CNL ROR are being addressed and discussed with Chippewas of Kettle and Stony Point First Nation through an issues tracking table maintained by CNSC staff. CNSC staff reached out to the Chippewas of Kettle and Stony Point First Nation to offer to have a specific meeting and

			discussions to address their concerns, comments, and recommendations in relation to the 2023 CNL ROR. CNSC staff looks forward to working with Chippewas of Kettle and Stony Point First Nation to address their comments and recommendations. The themes of the issues and concerns raised span from emergency management, environmental monitoring and more.
Mississaugas of Scugog Island First Nation	10 (Across 5 categories)	10	The issues, concerns and recommendations raised by MSIFN in their intervention for the 2023 CNL ROR are being addressed and discussed with MSIFN through an issues tracking table maintained by CNSC staff. CNSC staff reached out to the MSIFN to offer to have a specific meeting and discussions to address their concerns, comments, and recommendations in relation to the 2023 CNL ROR. CNSC staff looks forward to working with MSIFN to address their comments and recommendations. The themes of the issues and concerns raised span from emergency management, environmental monitoring and more.

** “Responded to” refers to the number of requests/concerns/comments that CNSC staff have provided dispositions to, responded to directly, or have made requests with intervenors to have a specific meeting and discussions to address their concerns, comments and recommendations. See notes column for more details.*

The following table provides an overview of the key thematic categories raised in interventions from Indigenous Nations and Communities in relation to the 2023 CNL ROR and the number of times each theme or topic was raised in total. In total for this ROR last year there were 5 Indigenous intervenors. The categories included in Table B have been ordered from most frequently raised to least. The thematic categories are derived from the review of the 2023 interventions and CNSC staff’s analysis of the issues and topics raised.

CNSC staff are committed to continuing to follow up and work with each intervenor in Table A, as well as other repeat individuals and civil society organizations who intervened to continue discussions on how best to address these themes and areas of interest identified in their interventions.

Table F-2: Interventions by Thematic Category

Requests/Concerns/Comments Category in the intervention for the 2023 CNL ROR	Number of times the topic category was raised across 2023 CNL ROR interventions	Number of Intervenors who raised the topic in intervention
Regulatory Compliance	14	4
Environmental Protection	14	5
Radiation Protection	8	4
Emergency Management and Fire Protection	7	2
Indigenous Consultation and Engagement	14	5
Worker Safety	9	4
Public Communication and Awareness	7	5

Conclusion

CNSC staff take the issues and concerns raised by intervenors seriously. CNSC staff will continue to work with each intervenor identified in Tables F-1 and F-2 who have raised issues and concerns on identifying approaches to addressing the different topic areas, requests and comments raised as appropriate. Furthermore, the CNSC is committed to continuously improving the quality of data included in RORs, and the ROR reporting process. CNSC acknowledges that the 2 main themes of issues raised in the 2023 CNL ROR were “CNL’s Activities and Engagement” and “CNSC’s Consultation and Engagement activities (Indigenous and public)” and has made it a priority to further discuss and address these issues, where feasible. As part of this commitment, CNSC staff have included appendices in all 2024 RORs with

information on the issues and concerns raised by intervenors and the status of the CNSC's work to follow-up, respond to and address each intervention as appropriate, and are working towards the continued expansion and enhancement of reporting to the Commission on issues tracking and engagement efforts.

The CNSC is dedicated to continuous improvement and actively works to identify meaningful ways and approaches for addressing the concerns, comments and recommendations made by intervenors identified in the RORs, where appropriate. In instances where issues and concerns are raised that the CNSC and the intervenor may disagree the CNSC is open to having dialogue and working towards finding solutions and building consensus around key issues within the CNSC's mandate and authority.

Appendix G: Indigenous Nations, communities and organizations that have traditional and/or treaty territories and/or interests within proximity to the licensed facilities

Appendix G1: Chalk River Laboratories and Nuclear Power Demonstration Waste Facility

- Algonquin Anishinabeg Nation Tribal Council (AANTC)
- Algonquin Nation Secretariat (ANS)
- Algonquins of Barriere Lake (ABL)
- Algonquins of Ontario (AOO)
- Algonquins of Pikwàkanagàn First Nation (AOPFN)
- Conseil de la Nation Anishnabe de Lac Simon
- Conseil de la Première Nation Abitibiwinini
- Kebaowek First Nation (KFN)
- Kitcisakik First Nation
- Kitigan Zibi Anishinabeg First Nation (KZA)
- Long Point First Nation (LPFN)
- Métis Nation of Ontario (MNO) Regions 5 & 6
- Mitchikanibikok Inik (Algonquins of Barriere Lake)
- Timiskaming First Nation (TFN)
- Wahgoshig First Nation
- Williams Treaties First Nations:
 - Alderville First Nation (AFN)
 - Beausoleil First Nation (BFN)
 - Chippewas of Georgina Island First Nation (CGIFN)
 - Mnjikaming (Chippewas of Rama First Nation (CRFN))
 - Curve Lake First Nation (CLFN)
 - Hiawatha First Nation (HFN)
 - Mississaugas of Scugog Island First Nation (MSIFN)
- Wolf Lake First Nation

Appendix G2: Douglas Point Waste Facility

- Saugeen Ojibway Nation, comprised of:
 - Chippewas of Nawash Unceded First Nation
- Saugeen First Nation (SFN)
- Historic Saugeen Métis (HSM)
- Métis Nation of Ontario (MNO) Region 7
- Chippewas of Kettle and Stony Point First Nation

Appendix G3: Gentilly-1 Waste Facility

- W8banaki
 - Abénakis of Wôlinak
 - Abénakis of Odanak
- Conseil de la Nation Wendat

Appendix G4: Whiteshell Laboratories

- Sagkeeng Anicinabe First Nation (SAFN)
- Black River First Nation (BRFN)
- Brokenhead Ojibway Nation (BON)
- Grand Council of Treaty 3 (GCT3)
- Hollow Water First Nation (HWFN)
- Iskatewizaagegan #39 Independent First Nation (IIFN)
- Manitoba Métis Federation (MMF)
- Northwest Angle #33 First Nation (NWAFN)
- Shoal Lake #40 First Nation (SL40FN)
- Wabaseemoong Independent Nations (WIN)
- Peguis First Nation (PFN)

Appendix G5: Port Hope Area Initiative

- Williams Treaties First Nations:
 - Alderville First Nation (AFN)
 - Beausoleil First Nation (BFN)
 - the Chippewas of Georgina Island First Nation (CGIFN)

- Mnjikaming (Chippewas of Rama First Nation (CRFN))
 - Curve Lake First Nation (CLFN)
 - Hiawatha First Nation (HFN)
 - Mississaugas of Scugog Island First Nation (MSIFN)
- Mohawks of the Bay of Quinte (MBQ)
- Métis Nation of Ontario (MNO) Regions 6 & 8

Appendix H: Summary of engagement in relation to CNSC's Terms of Reference for Long-term Engagement and Associated Workplans

CNSC staff have formalized 11 Terms of Reference (ToRs) for long-term engagement. Existing ToRs with Indigenous Nations and communities with an interest in CNL sites and activities include: Algonquins of Pikwakanagan First Nation (AOPFN), Curve Lake First Nation (CLFN), Hiawatha First Nation (HFN), Kebaowek First Nation (KFN), Mississaugas of Scugog Island First Nation (MSIFN), Métis Nation of Ontario (MNO) and Historic Saugeen Métis (HSM). The CNSC is open to developing ToR for long-term engagement with other interested Indigenous Nations and communities as appropriate.

A summary of engagement conducted in relation to each ToR for each Indigenous Nation and community can be found below.

The Algonquins of Pikwàkanagàn First Nation - CNSC Long-term Engagement Terms of Reference

As committed to in the ToR for long-term engagement, CNSC prepared the below summary on the progress and related outcomes of the collaboration activities under the ToR and yearly workplan and presented it to AOPFN for review. AOPFN representatives' internal capacity was limited and they were unable to conduct a meaningful review during the designated review window. This update was drafted by the CNSC based on previous conversations with the Nation, and with key elements selected from the co-drafted workplan, which was created and agreed upon by both parties. AOPFN may provide revisions and comments to the summary as part of their intervention. On November 30, 2022, CNSC Staff and the AOPFN signed a ToR for long-term engagement, providing a formalized structure for ongoing dialogue on CNSC-regulated facilities and activities of interest in AOPFN's traditional territory. As part of the ToR, a yearly work plan is developed between the CNSC and AOPFN, which provides information on the scope of work, detailed activities, and timelines associated with work items for collaboration and engagement.

In 2024, the work plan included activities that CNSC staff and AOPFN collaborated on to implement throughout 2024 and beyond, including:

- participation in the CNSC's Independent Environmental Monitoring Program (IEMP)

- updates and discussions on specific projects and ongoing operations of existing nuclear facilities of interest
- information, communication and other topics (i.e., REGDOC updates, feedback on CNSC reporting and processes, and PFP opportunities)

In 2024, AOPFN and CNSC staff met regularly in monthly and quarterly meetings, including an in-person quarterly meeting in July 2024, and worked collaboratively to make progress on the agreed upon initiatives in the workplan. CNSC staff and AOPFN continued to track, collaboratively verify, and provide responses to key concerns and issues raised by AOPFN throughout 2024 including through AOPFN's submissions and interventions to the Commission. Topics of discussion related to Canadian Nuclear Laboratories sites in AOPFN's traditional territory included regular updates on the NPD closure project, as well as the NSDF project's status and timelines. AOPFN also provided comments on the NPD Algonquin Knowledge Study What We Heard Report.

In 2025, AOPFN and CNSC staff plan to continue monthly and quarterly meetings to work on agreed upon initiatives in the workplan. Some of the activities planned for 2025 include continued consultation and engagement activities for Uranium and Nuclear Substances and Processes Facilities in AOPFN territory, continued work on collaborating on enhancing the approach to weaving AOPFN's Algonquin Knowledge into CNSC staff's assessments and processes respecting AOPFN's Algonquin Knowledge Protocols for project assessments, engagement and collaboration on the IEMP sampling campaign and ongoing collaboration on the RIMNet initiative.

CNSC and AOPFN will also continue to work together on validating, responding to and addressing AOPFN's issues, concerns and recommendations raised in AOPFN's interventions to the Commission and identified through ongoing discussions and engagement.

CNSC staff and AOPFN continue to be committed to strengthening the relationship through ongoing, respectful dialogue to share knowledge, information on culture and history, and perspectives that help CNSC staff and AOPFN learn from each other. CNSC staff will also continue to look for ways to enhance the relationship with AOPFN and identify areas for ongoing improvement in the CNSC's approach to engagement and reporting. CNSC staff and AOPFN will also continue to have discussions on areas of interest and on issues or concerns related to existing and proposed CNSC-regulated nuclear activities of interest to AOPFN. collaboratively verify and provide responses to key concerns and issues raised by AOPFN throughout 2023 including through AOPFN's submissions and interventions to the Commission.

Mississaugas of Scugog Island First Nation

As committed to with the Mississaugas of Scugog Island First Nation (MSIFN) as part of the ToR for long-term engagement with the CNSC, the update below was prepared in collaboration with MSIFN representatives.

In September 2021, CNSC staff started discussions with MSIFN to establish a formal long-term relationship with the Nation, and a ToR was signed between MSIFN and the CNSC in March 2022. As part of the ToR, a yearly work plan is developed between the CNSC and MSIFN, which provides information on the scope of work, detailed activities, and timelines associated with work items for collaboration and engagement. CNSC also provides funding and capacity support to the MSIFN through its Indigenous and Stakeholder Capacity Fund to support the meetings, engagement and collaboration work as per the ToR and engagement work plan.

In 2024, the work plan included:

- Long-term relationship meetings, engagement and issue-tracking
- Participation in the CNSC's Independent Environmental Monitoring Program (IEMP)
- Updates and discussions on specific projects and ongoing operations of licensed nuclear facilities of interest
- Discussions on CNSC's interpretation of and adherence to the UN Declaration on the Rights of Indigenous Peoples Act (UNDA)
- Participation in the CNSC Regulatory Oversight Reports (RORs) of interest
- Review of updates to CNSC REGDOC-3.2.2 and REGDOC-1.2.3
- Updates and discussion on other topics of interest such as Bill C-21, emergency management and preparedness, cumulative effects and risk assessment and Indigenous knowledge and land use data.

In 2024, MSIFN and CNSC staff continued to meet monthly and work collaboratively to make progress on a number of the agreed-upon initiatives in the work plan. CNSC staff and MSIFN continued to track, collaboratively verify, and provide responses to key concerns and issues raised by MSIFN throughout 2024. Alongside the regularly scheduled monthly meetings, additional topic-specific meetings were held with MSIFN and CNSC staff. Other relevant parties, including subject matter experts, proponents, licensees, and federal departments, were brought in to support discussions and explore matters of interest in greater detail. Some topic-specific meetings were inclusive of the larger Michi Saagiig Nations of the Williams Treaties First Nations (WTFN), including Curve Lake, Alderville, and Hiawatha.

MSIFN emphasizes the need for CNSC compliance with the United Nations Declaration on the Rights of Indigenous Peoples (UNDRIP), including Free, Prior, and Informed Consent (FPIC), and calls for the Crown to facilitate enforceable agreements with proponents, environmental protections, economic inclusion, and active participation in regulatory processes.

Topics of discussion related to Canadian Nuclear Laboratories (CNL) sites and facilities in Mississauga's of Scugog Island First Nation's territory included updates and information sharing regarding the Near Surface Disposal Facility, Nuclear Power Demonstration Closure Project, the Global First Power Micro Modular Reactor Project, the Chalk River Laboratories site and the Port Hope Area Initiative including the anticipatory arsenic clean-up criteria amendment application.

In 2024, MSIFN submitted an intervention for the Regulatory Oversight Report for Canadian Nuclear Laboratories Sites: 2023. CNCS staff remain committed to working collaboratively with MSIFN to address the issues and concerns raised in their intervention and to engage in meaningful dialogue to find constructive solutions.

CNSC staff and the MSIFN are dedicated to strengthening their relationship through ongoing, respectful dialogue that fosters mutual learning and enhances communication and collaboration. By sharing knowledge, cultural insights, historical perspectives, and key information, both parties aim to deepen their understanding of each other. Additionally, CNSC staff will continue to engage in discussions on areas of interest, such as UNDRIP and FPIC, as well as any issues or concerns related to CNSC-regulated nuclear activities relevant to the MSIFN.

Kebaowek First Nation First Nation

CNSC prepared the below summary on the progress and related outcomes of the collaboration activities under the Terms of Reference (ToR) for long term engagement between the CNSC and Kebaowek First Nation (KFN) and shared it with KFN for validation. KFN cited funding and capacity restraints and were unable to review during the designated review window, however, KFN has reiterated their commitment to good faith engagement with the CNSC. This update was drafted by the CNSC based on previous conversations with the Nation, and with key elements selected from the co-drafted annual workplan. KFN may provide revisions and comments to the summary as part of their intervention.

In 2022, CNSC staff and KFN representatives started discussions to establish an arrangement for a long-term relationship (the Arrangement) as well as a Project Terms of Reference (ToR) for the Micro Modular Reactor (MMR), Nuclear Power Demonstration (NPD) Closure and Near Surface Disposal Facility (NSDF) projects. The long-term relationship Arrangement was signed on September 29, 2022, providing a formalized structure for ongoing dialogue on CNSC-regulated facilities and activities where KFN has identified concerns in relation to a project's construction or existing operations on their rights, interests, culture, current and traditional uses of their territory. The Project Terms of Reference was signed on June 9, 2023, providing a mutually determined framework for consultation and Rights Impact Assessment on the MMR, NPD Closure, and NSDF projects.

As part of the Arrangement and ToR, a yearly work plan is being developed between the CNSC and KFN that provides information on the scope of work, detailed activities, and timelines associated with work items for collaboration, consultation, and engagement. The work plan will include activities that CNSC staff and KFN will work to implement throughout 2025 and beyond, including:

- collaborative annual reporting to the Commission and to the KFN Chief and Council updates and discussions on specific projects and ongoing operations of licensed nuclear facilities of interest
- consultation opportunities, steps, and processes for the NPD Closure Project
- consultation opportunities, steps, and processes for the Global First Power MMR Project at the Chalk River Laboratories facility
- enhanced information sharing and communication between the CNSC and KFN members
- ongoing dialogue on the CNSC's approach to implementing the United Nations Declaration on the Rights of Indigenous Peoples (UNDRIP) and the Government of Canada's approach to Free, Prior, and Informed Consent (FPIC) for hazardous and natural resource projects, currently in development at NRCan
- opportunities to comment and review policies and regulations including those related to nuclear safety, non-proliferation, and Indigenous engagement.

In the summer of 2024, KFN hosted a leadership meeting with CNSC in their community; the meeting's purpose was to restart the relationship, which had paused following the Commission's January 2024 decision on the NSDF project. Following the meeting, KFN and CNSC resumed work on the annual workplan of activities under the signed Long-Term Relationship Arrangement.

In the fall of 2024, Canadian Nuclear Laboratories submitted their revised Environmental Impact Statement package for the NPD project to CNSC, and KFN participated in the Federal Provincial Indigenous Review Team, which undertook the technical review of the package.

In planning for 2025, KFN has expressed interest in participating in CNSC's Independent Environmental Monitoring Program's sampling event at Chalk River and CNSC will facilitate KFN participation by providing information on the event during regular engagement meetings and by offering funding opportunities.

The following facilities covered in this ROR are of interest in the to-be-developed work plan:

- Chalk River Laboratories
- NPD Closure Project

- Global First Power's MMR Project
- NSDF Project

CNSC staff and KFN are committed to continuing to strengthen the relationship through ongoing, respectful dialogue and the sharing of knowledge, information on culture and history, and perspectives that help CNSC staff learn from KFN. CNSC staff will also continue to have discussions on areas of interest and concern related to CNSC-regulated nuclear activities of interest to KFN.

Curve Lake First Nation

As committed to with Curve Lake First Nation as part of the Terms of Reference for long-term engagement with the CNSC, the update below was prepared in collaboration with Curve Lake First Nation representatives.

In February 2021, CNSC staff and Curve Lake First Nation signed a Terms of Reference (ToR) for long-term engagement, providing a formalized structure for ongoing dialogue on CNSC-regulated facilities and activities of interest in Curve Lake First Nation's traditional and treaty territories. As part of the ToR, a yearly work plan is developed between the CNSC and Curve Lake First Nation that provides information on the scope of work, detailed activities, and timelines associated with work items for collaboration and engagement. In 2024 the work plan included activities that CNSC staff and Curve Lake First Nation collaborated on to implement throughout 2024 and beyond, including:

- Participation in the CNSC's Independent Environmental Monitoring Program (IEMP)
- Updates and discussions on specific projects and ongoing operations of existing nuclear facilities of interest
- Information, communication, and other topics (i.e. REGDOC updates, feedback on CNSC reporting and processes, funding opportunities, radiation monitoring and cumulative effects)
- Developing a plan for a Curve Lake First Nation Indigenous Knowledge Study

In 2024, due to capacity constraints and other priorities Curve Lake First Nation and CNSC were not able to initiate discussions on developing a plan for an Indigenous Knowledge study. However, Curve Lake First Nation and CNSC are committed to developing a plan for a Regional IK Study in 2025. Due to capacity constraints, despite best efforts by Curve Lake First Nation, and funding opportunities made available by CNSC, there are topics and issues that have not been adequately discussed and addressed. Both Curve Lake First Nation and CNSC are committed to an ongoing effort to close such gaps

In 2024, Curve Lake First Nation and CNSC staff continued to meet monthly and work collaboratively to make progress on the agreed upon initiatives in the work plan. Through

monthly meetings and interactions, Curve Lake First Nation and CNSC have developed a good working relationship; one that has been conducive to open and direct communications.

Topics of discussion related to Canadian Nuclear Labs sites and facilities in Curve Lake First Nation's territory included updates and information sharing with regards to ongoing CNL projects and sites including Nuclear Power Demonstration Closure Project, the Chalk River Laboratories site, and the Port Hope Area Initiative Clean Up Criteria.

In 2024, CNSC staff attended Curve Lake First Nation community events, including the Alternate Routes Career fair in November 2024 and Harvesters Symposium in July 2024. CNSC staff look forward to continuing to enhance information sharing and communication with Curve Lake First Nation community members and leadership.

In 2024 CNSC staff and Curve Lake First Nation had focused discussions on the key themes raised in their interventions to the Commission and are working together to discuss and address the issues, concerns and recommendations raised in Curve Lake First Nation's interventions.

CNSC staff and Curve Lake First Nation continue to be committed to strengthening the relationship through on-going respectful dialogue to share knowledge, information on culture, history, Rights and interests and perspectives that help CNSC staff and Curve Lake First Nation learn from each other and improve collaboration and communications. CNSC staff are committed to continuing to have discussions regarding areas of interest and issues or concerns related to existing and proposed CNSC-regulated nuclear activities of interest to Curve Lake First Nation.

Historic Saugeen Métis

As committed to with the Historic Saugeen Métis (HSM) as part of the Terms of Reference (ToR) for long-term engagement with the CNSC, the update below was prepared in collaboration with HSM representatives.

Following the licence renewal hearing for the Bruce Nuclear Generating Station in 2018, a Terms of Reference (TOR) was agreed upon and signed April 12, 2019, between CNSC staff and the HSM. This TOR provides a framework for engagement between HSM and CNSC staff and is supported by the CNSC's Indigenous and Stakeholder Capacity Fund and Participant Funding Program, which ensure that HSM is provided with adequate and meaningful funding, support and capacity to participate in consultation and engagement activities required throughout the year. Topics of discussion related to the facilities in this ROR included updates and discussions about the Bruce Nuclear Generating Station (Major Component Replacement and operational activities including updates on pressure tubes), OPG's Western Waste Management Facility, CNL's Douglas Point decommissioning project and NWMO's Adaptive Phase Management project.

The CNSC's Independent Environmental Monitoring Program (IEMP) is scheduled to sample near the Bruce Nuclear Generating Station in 2025. Late in 2024 as part of HSM and CNSC's semi-annual meeting series, CNSC staff notified HSM that this sampling was scheduled and had initial conversations about HSM's interest in participating. The planning and sampling associated with this campaign are expected to continue into 2025.

HSM invited CNSC staff to participate in a Turtle Stewardship Workshop in May of 2024, which allowed CNSC staff to learn more about the significance of Ontario's turtles to HSM and about their stewardship efforts. HSM provided a cultural walk in MacGregor Park in June of 2024 to share some of the geological history of the land, as well as HSM's cultural connections to the area. CNSC staff learned more about the environment around the Bruce site, including traditional uses and importance of various plant species. Using the CNSC's Indigenous and Stakeholder Capacity Fund, HSM compiled a Community Plant Guide to document plants that are important to the HSM community, which was also shared with CNSC staff. HSM had invited CNSC staff to attend the annual HSM Rendezvous in August 2024 to share information about radiation and the CNSC's regulatory oversight of the nuclear industry in Canada, but this event was unfortunately cancelled.

In 2024, Bruce Power announced their intent to pursue an Integrated Impact Assessment for up to 4,800 MW of new nuclear generating capacity at the Bruce site. The CNSC established a Memorandum of Understanding with the Impact Assessment Agency of Canada (IAAC) in 2019 to conduct Integrated Impact Assessments for projects that are implicated by both the Impact Assessment Act, 2019 and the NSCA. CNSC staff have been collaborating with IAAC to conduct early engagement on the Integrated Impact Assessment process, including presentations to HSM's staff and Council. CNSC staff and IAAC have been proactively engaging with the HSM on the integrated assessment process for this potential project, as well as providing participant and capacity funding to support HSM. IAAC staff are frequently invited to the regular bi-annual meetings with HSM established under the HSM-CNSC ToR, as well as to ad-hoc meetings held on topics of interest to HSM in order to maintain regular communication and lessen the demand on HSM's time and resources.

CNSC staff and HSM continue to dialogue about HSM's outstanding concerns on fish impingement and entrainment, thermal effluent, and climate change. HSM continued to actively participate and make informed contributions to the CNSC's regulatory processes and oversight. CNSC staff plan to continue to engage and update HSM on regulatory activities on a semi-annual basis as agreed upon in the Terms of Reference.

Métis Nation of Ontario

As committed to with the Métis Nation of Ontario as part of the terms of reference (ToR) for long-term engagement with the CNSC, the update below was prepared in collaboration with Métis Nation of Ontario representatives.

Following the licence renewal hearing for the Bruce Nuclear Generating Station in 2018, a ToR was agreed upon and signed on December 18, 2019, between CNSC staff and the MNO, which formally documents the engagement with their Nation. As the MNO is a province-wide organization, a specific engagement plan under the Terms of Reference was also signed in December 2019 with MNO Region 7.

In 2024, the engagement plans included:

- Participation in the CNSC's IEMP
- Sharing information on NWMO's Adaptive Phase Management initiative
- Sharing information on the Nuclear Power Demonstration (NPD) Closure project
- Sharing information on SMRs, and GFP's Micro Modular Reactor (MMR) project
- Sharing information on the Chalk River Laboratories site
- Sharing information on the Darlington Nuclear Generating Station and Waste management Facility
- Sharing information on the Darlington New Nuclear Project
- Sharing information on the Pickering Nuclear Generating Station and Waste management Facility
- Sharing information on the Port Hope Area Initiative
- Sharing information on the Cameco Fuel Manufacturing, Port Hope Conversion Facility, and Blind River Refinery
- Sharing information on the BWXT Facilities in Toronto, Peterborough, and Ottawa, ON
- Sharing information on the Best Theratronics facility
- Sharing information on the Nordion facility
- Sharing information on the SRB Technologies facility
- CNSC to support MNO capacity building through new Indigenous and Stakeholder Capacity Fund (ISCF), including the hiring of a community liaison to work with CNSC directly
- Communication with MNO citizens

MNO invited CNSC staff to attend a Metis and Energy Knowledge Symposium held by MNO Region 7 in June of 2024, where CNSC staff learned about Metis knowledge and culture and provided information about nuclear safety and regulation to Metis community members. MNO also invited CNSC staff to attend a Fish Fry held by the Great Lakes Métis Council in July of 2024 to participate in cultural learning, and the MNO Annual General Assembly in August of 2024 to

learn about MNO governance and share information about nuclear safety and regulation to Metis community members.

CNSC staff notified MNO of the four Independent Environmental Monitoring Program (IEMP) campaigns that took place in Ontario over 2024 and invited them to participate in sampling activities. MNO did not participate in sampling in 2024 but remain interested in the IEMP. The CNSC's IEMP is scheduled to sample near the Bruce Nuclear Generating Station in 2025. Late in 2024 as part of MNO Region 7 and CNSC's semi-annual meeting series, CNSC staff notified MNO that this sampling was scheduled and had initial conversations about MNO's interest in participating. The planning and sampling associated with this campaign are expected to continue into 2025.

As per the workplan, CNSC and MNO worked to identify areas of collaboration, including environmental monitoring through the IEMP, providing information relating to the MMR Project, the Chalk River Laboratories Site, and the NPD project, as well as MNO's potential participation in the FPIRT for this project. As per the ToR, CNSC staff continued to meet with MNO Lands Resources and Consultations branch on a monthly basis.

Hiawatha First Nation

As committed to with Hiawatha First Nation (HFN) as part of the ToR for long-term engagement with the CNSC, the update below was prepared and shared with HFN for review; however, no comments were received prior to finalization.

In May 2023, CNSC staff and Hiawatha First Nation signed a ToR for long-term engagement, providing a formalized structure for ongoing dialogue on CNSC-regulated facilities and activities of interest in Hiawatha First Nation's traditional and treaty territories. As part of the ToR, a yearly work plan is developed between the CNSC and Hiawatha First Nation that provides information on the scope of work, detailed activities, and timelines associated with work items for collaboration and engagement. In 2024, the work plan included activities that CNSC staff and Hiawatha First Nation collaborated on implementing throughout 2024 and beyond, including:

- Participation in the CNSC's Independent Environmental Monitoring Program (IEMP)
- Updates and discussions on specific projects and ongoing operations of existing nuclear facilities of interest
- Information, communication, and other topics (i.e. REGDOC updates, feedback on CNSC reporting and processes, funding opportunities, radiation monitoring and cumulative effects)
- Developing a plan for a Hiawatha First Nation Indigenous Knowledge Study

Hiawatha First Nation and CNSC were not able to initiate discussions on developing a plan for an Indigenous Knowledge (IK) study. However, Hiawatha First Nation and CNSC are committed to developing a plan for a Hiawatha First Nation IK Study in 2025.

In 2024, Hiawatha First Nation and CNSC staff continued to meet monthly and work collaboratively to make progress on the agreed upon initiatives in the work plan. Through monthly meetings and interactions, Hiawatha First Nation and CNSC are progressing their working relationship.

Topics of discussion related to Canadian Nuclear Labs sites and facilities in Hiawatha First Nation's territory included updates and information sharing with regards to ongoing CNL projects and sites including the Nuclear Power Demonstration Closure Project, Chalk River Laboratories site and the Port Hope Area Initiative clean up criteria amendment application.

In 2024 CNSC staff and Hiawatha First Nation had focused discussions on the key themes raised in their interventions to the Commission and are working together to discuss and address the issues, concerns and recommendations raised in Hiawatha First Nation's interventions.

CNSC staff and Hiawatha First Nation continue to be committed to strengthening the relationship through on-going respectful dialogue to share knowledge, information on culture, history and perspectives that help CNSC staff and Hiawatha First Nation learn from each other and improve collaboration and communication. CNSC staff are committed to continuing to have discussions regarding areas of interest and issues or concerns related to existing and proposed CNSC-regulated nuclear activities of interest to Hiawatha First Nation. Hiawatha First Nation would like to see real change in the CNSC's regulatory and consultation processes. This includes the implementation of the 2018 Williams Treaties Settlement Agreement, which would in effect uphold the Inherent and Treaty rights of the First Nation. The Williams Treaties Settlement Agreement was signed in 2018 and recognized the pre-existing treaty harvesting rights for the First Nations members and included both federal and provincial apologies for the negative impacts of the Williams Treaties on the First Nations. CNSC staff and Hiawatha First Nation are committed to working together to ensure Hiawatha First Nation's rights and interests are protected and reflected in the CNSC's regulatory process and documents.

Saugeen Ojibway Nation

As committed to with the Saugeen Ojibway Nation (SON) as part of the Terms of Reference (ToR) for long-term engagement with the CNSC, the update below was prepared in collaboration with SON.

A ToR was signed between SON and the CNSC in 2019. The ToR ensures that SON is provided with adequate and meaningful funding, support, and capacity to participate in consultation and engagement activities required throughout the year. As part of the ToR, a yearly work plan is developed between the CNSC and SON, which provides information on the scope of work,

detailed activities, and timelines associated with work items for collaboration and engagement.

In 2024, the work plan included:

- Joint review and analysis of licensee submissions, particularly around environmental protection
- Following-up on the CNSC's 2022 Independent Environmental Monitoring Program (IEMP) sampling to share and discuss the results
- Inclusion on the design and review of Bruce Power's study of available mitigation measures for environmental impacts
- CNSC staff outreach in SON communities
- Sharing the results of CNSC's environmental oversight, such as inspection reports
- Identifying federal, provincial, and municipal decision-making agencies, as needed
- Coordinating meetings with federal and provincial Crown agencies, as needed
- Sharing information on the Western Waste Management Facility (WWMF), Douglas Point, NWMO's Adaptive Phase Management initiative, OPG's Darlington New Nuclear Project (DNNP), Darlington Nuclear Generating Station (DNGS) and Pickering Nuclear Generating Station (PNGS), and Bruce Power's existing and anticipated projects.
- The work plan sets out detailed tasks and timelines for each of these items. Topics of discussion related to the facilities in this ROR included updates and discussions about the WWMF, Douglas Point, NWMO's Adaptive Phase Management initiative, OPG's DNNP DNGS and PNGS, and Bruce Power's existing and anticipated projects.

CNSC staff understand that SON continue to have concerns regarding the environmental impacts resulting from the nuclear activities at the Bruce Nuclear Generating Station (BNGS), which were presented in their intervention in Bruce Power's licence renewal hearing on March 14, 2018. The focus of the activities in the work plan is to ensure SON oversight, inclusion, and a means to obtain additional information that will provide clarity, transparency and assurances for the communities and SON leadership regarding the interactions between the BNGS facility and the environment.

In 2024, CNSC staff and SON continued to meet and work collaboratively to complete a number of the initiatives in the work plan. One of these activities included CNSC's funding support for a traditional land use and occupancy study to obtain a baseline inventory of mapped cultural sites in relation to SON's Territory, including the Territory around the Bruce Power site. Due to the pandemic and inability to meet with community members in person, this work had been

delayed, however, SON have informed CNSC staff that data collection is complete and that the report was finalized in 2024.

After completing collaborative work on Bruce Power's mitigation measures study, SON and CNSC staff have further collaborated on environmental monitoring, mitigation measures, and updates to the CNSC's regulatory framework. In 2024, CNSC staff met with SON and Bruce Power on mitigation measures used at the Bruce site and emerging technologies to discuss how best to continue to have dialogue on potential options that could be considered in future reviews. As a result, CNSC staff and Bruce Power invited SON to attend a quarterly environment update meeting with ECCC and DFO to facilitate communication on this topic and better involve SON in regulatory oversight of the Bruce site.

CNSC staff participated in a number of outreach activities with SON. CNSC staff attended SON's Mothers' Day market and Sconefest, both as an opportunity for the CNSC to learn about and better understand SON communities, and to interact with SON members discuss and answer questions related to nuclear safety and regulation in Canada.

SON completed another year of the Coastal Waters Monitoring Program (CWMP), which is an initiative funded in part by Bruce Power, but designed, led, and implemented by SON to monitor environmental conditions in the nearshore areas of the Saugeen Peninsula. In 2023, the CNSC's Indigenous Capacity Support Fund opportunity opened for the first time, and SON applied for additional funding to support the administration of their CWMP. SON plans to share with CNSC the 2023 and 2024 Annual CWMP Reports. CNSC staff are interested supporting the work of the CWMP, as this will provide data that can be used in future environmental risk assessments in relation to the BNGS.

The CNSC's IEMP is scheduled to sample near the BNGS in 2025. Late in 2024, CNSC staff notified SON that this sampling was scheduled and had initial conversations about SON's interest in participating. The planning and sampling associated with this campaign are expected to continue into 2025.

SON has on-going concerns regarding the storage of nuclear waste in their territory. SON intervened in the January 2024 Commission Hearing related to OPG's application to determine the applicability of the DNNP Environmental Assessment to the selected reactor technology; the Spring 2024 Commission hearing in writing related to OPG's application to amend the DNGS licence to authorize the production of Cobalt-60; and the June 2024 Commission hearing related to OPG's application to extend the operation of the Pickering NGS units 5-8 until December 31st, 2026. Through each of these interventions, SON raised concerns about the projects' interactions with OPG's WWMF and due to recent Deep Geological Repository siting discussions with NWMO. SON raised concerns about the increasing volume and types of waste that these and other anticipated applications represent as well as how they are regulated. SON and CNSC staff consequently added these generating facilities to the work plan, discussed them

at regular monthly meetings. CNSC staff will notify SON of licensing activities at these generating facilities going forward.

In late Summer/Fall 2024, SON and CNSC staff agreed to update the design of the collaborative workplan, rework the format of regular meeting series, and renew the SON-CNSC ToR to adapt to the evolving regulatory landscape. SON and CNSC staff paused monthly meetings in July 2024 to allow for renewed direction from SON leadership and the preparation of a draft updated workplan and relationship agreement. During this time, SON and CNSC staff continued to meet as needed to provide updates and collaborate on regulatory matters. SON and CNSC staff remain committed to continuing to work closely together to update the work plan and renew the SON-CNSC ToR.

In 2024, Bruce Power announced their intent to pursue an Integrated Impact Assessment for up to 4,800 MW of new nuclear generating capacity at the Bruce site. The CNSC has a Memorandum of Understanding with the Impact Assessment Agency of Canada (IAAC), established in 2019 to conduct Integrated Impact Assessments for projects that are implicated by both the *Impact Assessment Act*, 2019 and the NSCA. IAAC is identified as the Crown Consultation Coordinator for Integrated Impact Assessments under this MOU. CNSC staff worked closely with IAAC and SON in 2024 to conduct early engagement on the Integrated Impact Assessment process, including regular tri-lateral meetings with SON's Environment Office as well as presentations and workshops with SON's Nuclear Advisory Committee. The Planning Phase of this Integrated Impact Assessment was initiated in August 2024

CNSC staff and SON will continue to work collaboratively to address areas of concern, and to understand and protect the rights and interests of SON in relation to the regulation of the Bruce site.

Appendix I: Lost-Time Injury Information

This appendix contains information on the number, frequency, and severity of RLTIs at the CNL sites covered by this ROR, within information presented separately for CNL employees and contractors.

Appendix I1: CNL Employees

Frequency and severity are calculated per 100 full-time workers (equivalent to 200,000 worker-hours per year) using the following formulas:

Frequency rate = (# of Lost-Time Injuries) x (200 000 hrs of exposure) / (person hours worked)

Severity rate = (# of Working Days Lost) x (200 000 hrs of exposure) / (person hours worked)

Table I1-1: Summary of CRL's Employee RLTIs, frequency, and severity

Year	2020	2021	2022	2023	2024
Person Hours Worked	5,346,690	5,358,630	5,709,410	5,638,040	5,328,156
Lost-Time Injuries	4	3	2	3	14
Working Days Lost	78	4	3	38	285
Frequency	0.15	0.11	0.07	0.11	0.52
Severity	2.92	0.15	0.15	1.35	10.69

Table I1-2: Summary of WL’s Employee RLTIs, frequency, and severity

Year	2020	2021	2022	2023	2024
Person Hours Worked	584,030	684,000	812,000	769,540	744,227
Lost-Time Injuries	1	0	0	4	4
Working Days Lost	2	0	0	25	6
Frequency	0.34	0	0	1.04	1.07
Severity	0.68	0	0	6.50	1.61

Table I1-3: Summary of PHAI’s Employee RLTIs, frequency, and severity

Year	2020	2021	2022	2023	2024
Person Hours Worked	421,875	408,630	407,956	502,175	652,548
Lost-Time Injuries	0	2	0	0	1
Working Days Lost	0	12	0	0	6
Frequency	0	1.03	0	0	0.31
Severity	0	6.17	0	0	1.84

Table I1-4: Summary of DPWF, G1WF, and NPDWF Employee RLTIs, frequency, and severity

Year	2020	2021	2022	2023	2024
<i>CNL staff at the DPWF, G1WF, and NPDWF sites have not recorded a lost-time injury since 2016.</i>					

Appendix I2: Contractors at CNL Sites

The number of contractor recordable lost-time incidents reported to CNL in 2024 is shown in Table I2-1.

CNL records the number of lost-time injuries reported to CNL by their contractors. However, contractor employee hours worked is considered sensitive information and the contractors do not divulge the specific number of hours worked to CNL as their client. Therefore, CNL does not provide frequency and severity rates for contractors since these calculations require hours worked.

Table I2-1: Contractor lost-time injuries in 2024 (Source: CNL)

Year	CRL	WL	PHAI	DPWF	G1WF	NPD
Lost-Time Injuries	0	0	0	0	0	0

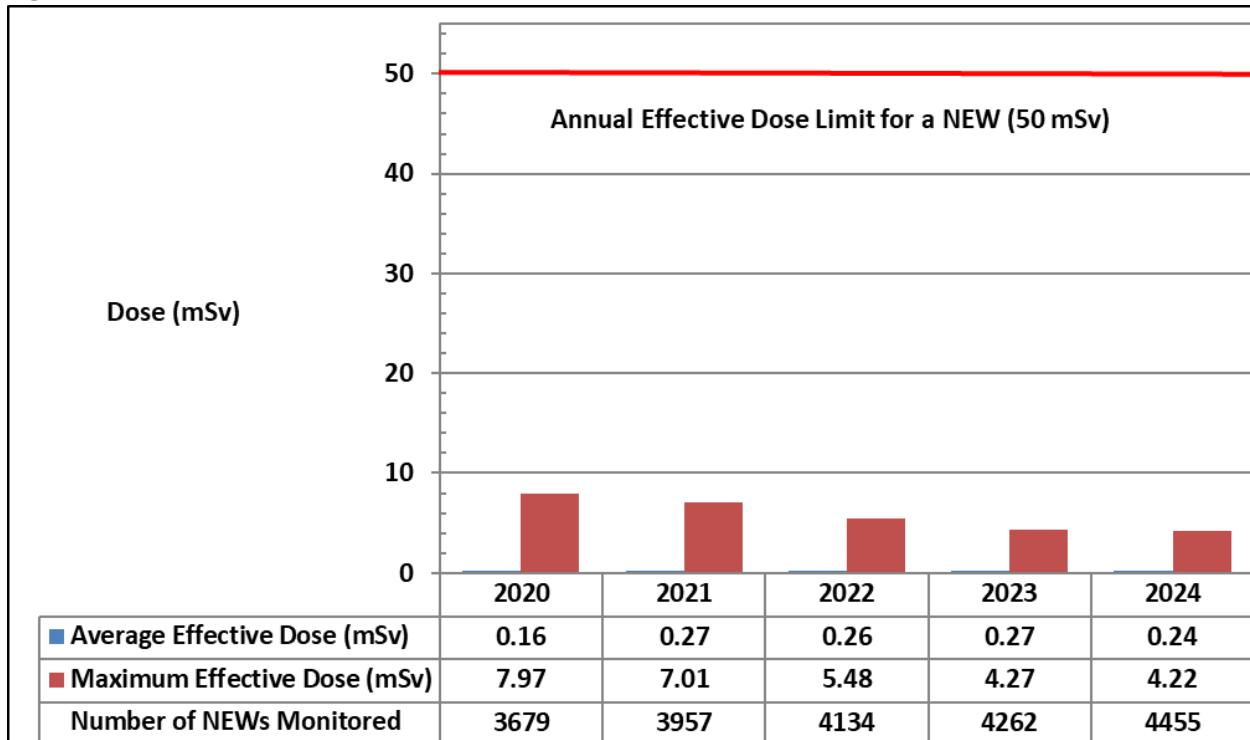
Appendix J: Dose to Nuclear Energy Workers at CNL Sites

This appendix presents information on doses to Nuclear Energy Workers (NEWs) at CNL sites.

Appendix J1: Chalk River Laboratories

Figure I1-1 provides the average and maximum effective doses received by NEWs at Chalk River Laboratories (CRL) from 2020 to 2024.

Figure J1-1: Effective doses for NEWs at CRL from 2020 – 2024



Annual average and maximum equivalent doses to the skin and extremities (hands) for NEWs at CRL from 2020 to 2024 are provided in Tables J1-1 and J1-2.

Table J1-1: Equivalent (skin) doses for NEWs at CRL from 2020 – 2024

Dose Data	2020	2021	2022	2023	2024	Regulatory Dose Limit
Average skin dose (mSv)	0.19	0.31	0.28	0.29	0.26	N/A
Maximum skin dose (mSv)	9.37	7.43	32	6.76	5.75	500 mSv/year

Table J1-2: Equivalent (extremity) doses for NEWs at CRL from 2020 – 2024

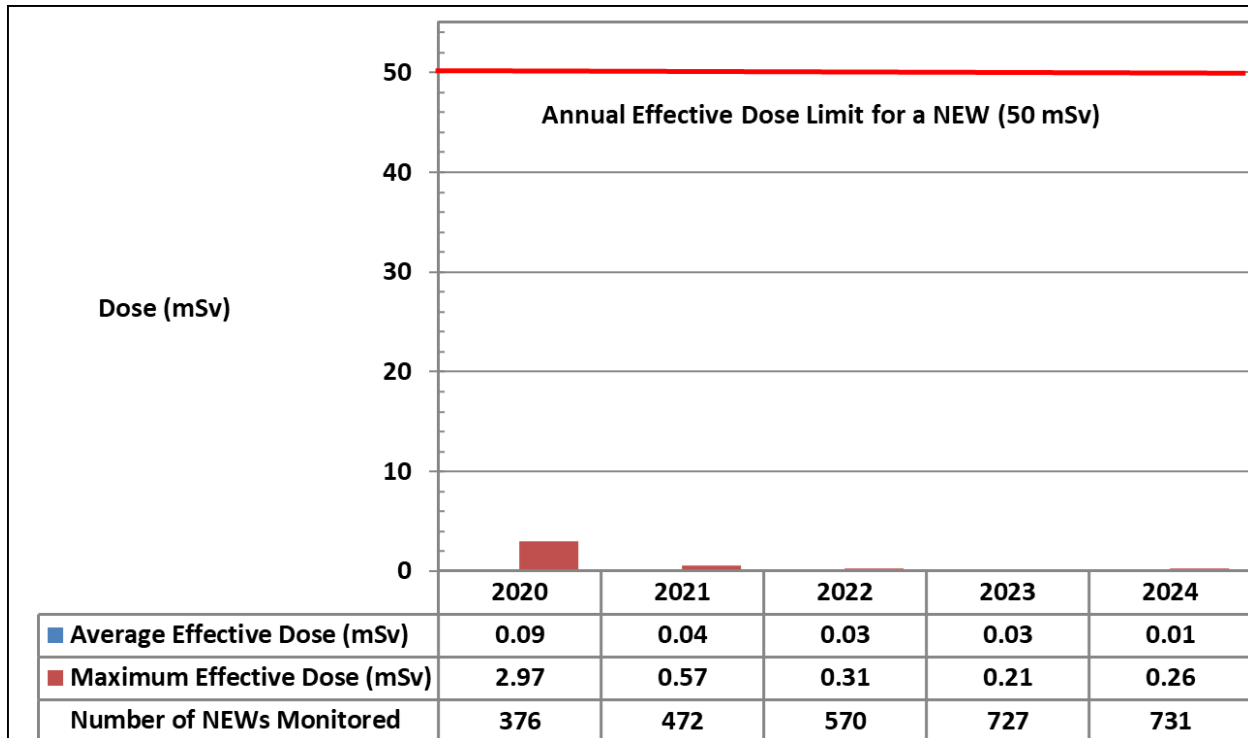
Dose Data	2020	2021	2022	2023	2024	Regulatory Dose Limit
Average extremity dose (mSv)	1.70	2.02	0.98	1.37	1.67	N/A
Maximum extremity dose (mSv)	11.86	28.30	11.50	13.18	32.37	500 mSv/year

The dose fluctuations from year to year are attributed to the scope and duration of the radiological work conducted, as well as the dose rates associated with the work. No adverse trends were identified in 2024.

Appendix J2: Whiteshell Laboratories

Figure J2-1 provides the average and maximum effective doses received by NEWs at Whiteshell Laboratories (WL) from 2020 to 2024.

Figure J2-1: Effective doses for NEWs at WL from 2020 – 2024



Annual average and maximum equivalent doses to the skin and extremities (hands) for NEWs at WL from 2020 to 2024 are provided in Tables J2-1 and J2-2.

Table J2-1: Equivalent (skin) doses for NEWs at WL from 2020 – 2024

Dose Data	2020	2021	2022	2023	2024	Regulatory Dose Limit
Average skin dose (mSv)	0.16	0.02	0.02	0.04	0.01	N/A
Maximum skin dose (mSv)	6.80	0.94	0.66	0.40	0.54	500 mSv/year

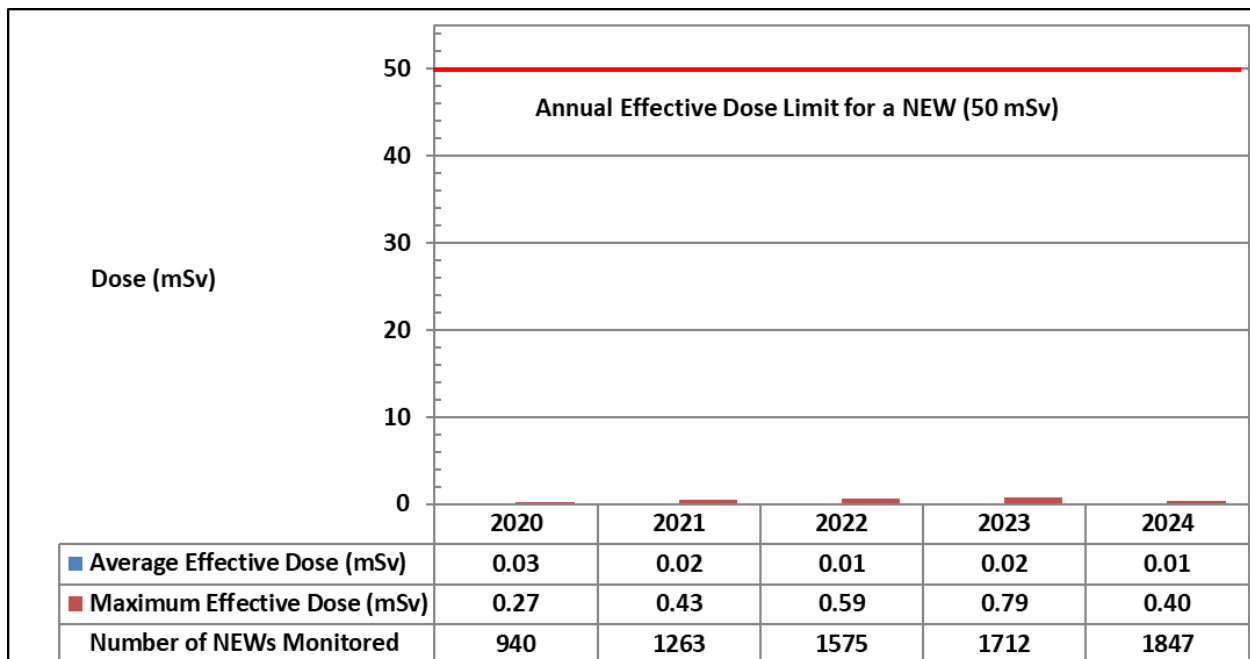
Table J2-2: Equivalent (extremity) doses for NEWs at WL from 2020 – 2024

Dose Data	2020	2021	2022	2023	2024	Regulatory Dose Limit
Average extremity dose (mSv)	1.43	0.45	0.27	0.05	0.14	N/A
Maximum extremity dose (mSv)	6.46	1.86	1.38	0.08	0.51	500 mSv/year

Appendix J3: Port Hope Area Initiative

Figure J3-1 provides the average and maximum effective doses received by NEWs at Port Hope Area Initiative from 2020 to 2024.

Figure J3-1: Effective doses for NEWs at PHAI from 2020 – 2024



Annual average and maximum equivalent doses to the skin for NEWs at Port Hope Area Initiative from 2020 to 2024 are provided in Table J3-1.

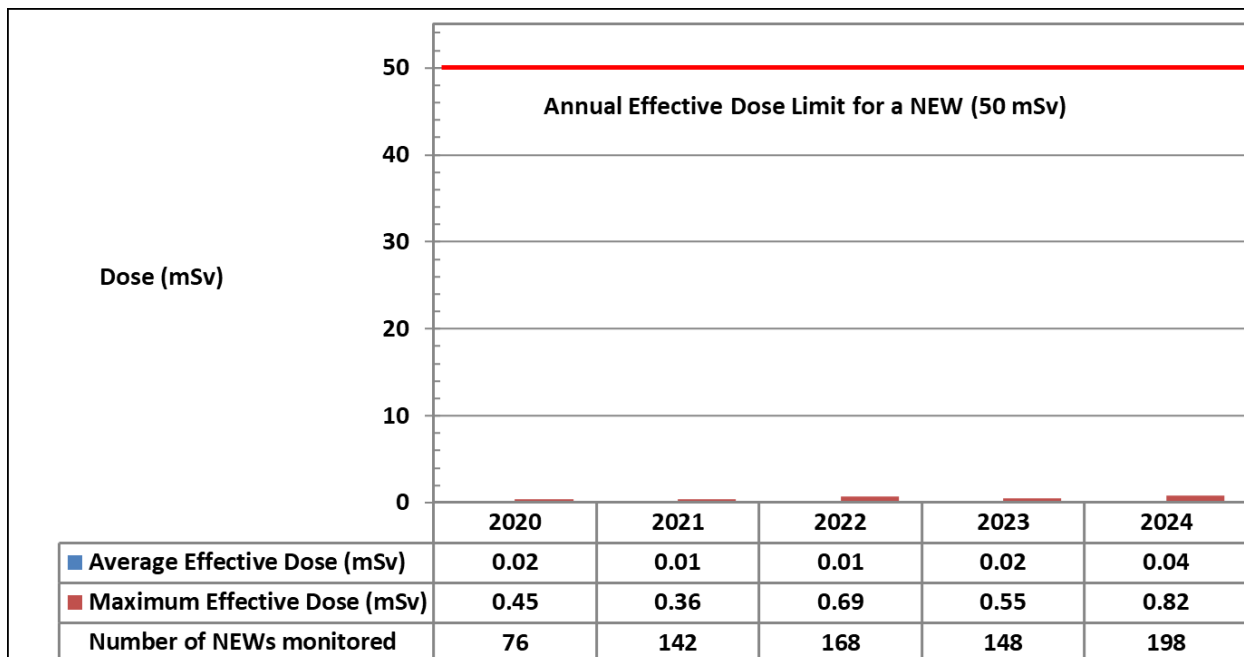
Table J3-1: Equivalent (skin) doses for NEWs at Port Hope Area Initiative from 2020 – 2024

Dose Data	2020	2021	2022	2023	2024	Regulatory Dose Limit
Average skin dose (mSv)	0.03	0.01	0.03	0.02	0.01	N/A
Maximum skin dose (mSv)	0.60	0.45	0.49	0.64	0.64	500 mSv/year

Appendix J4: Douglas Point Waste Facility

Figure J4-1 provides the average and maximum effective doses received by NEWs at Douglas Point Waste Facility from 2020 to 2024.

Figure J4-1: Effective doses for NEWs at DPWF from 2020 – 2024



Annual average and maximum equivalent doses to the skin for NEWs at DPWF from 2020 to 2024 are provided in Table J4-1.

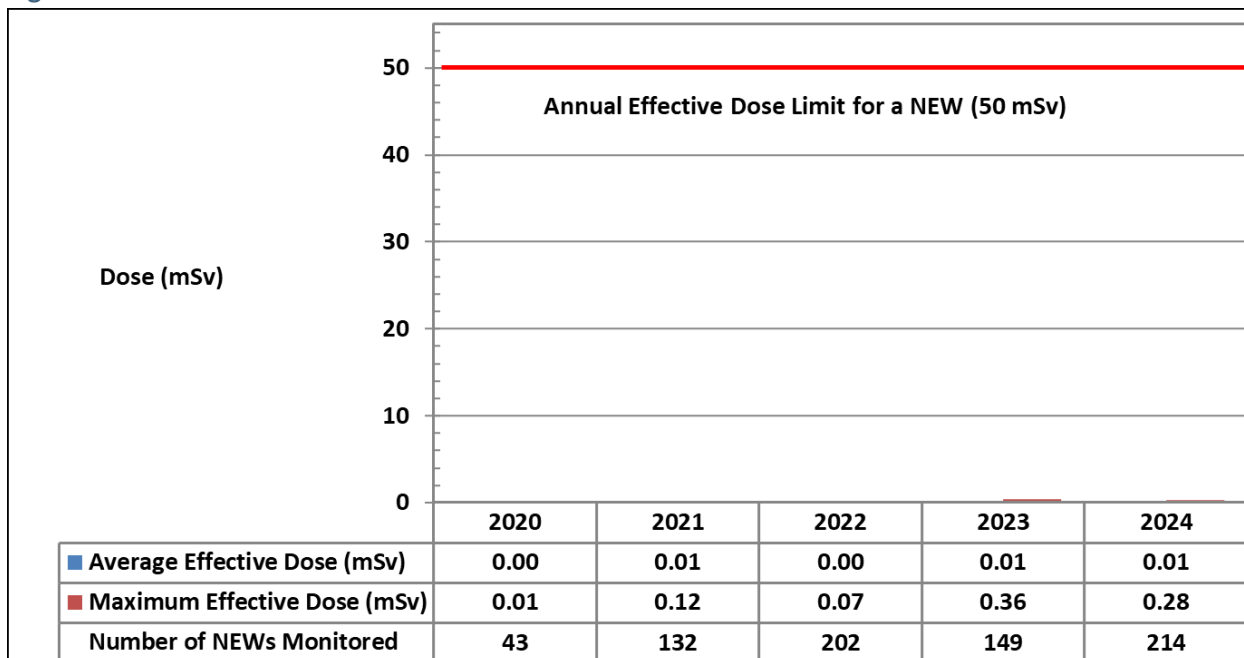
Table J4-1: Equivalent (skin) doses for NEWs at DPWF from 2020 – 2024

Dose Data	2020	2021	2022	2023	2024	Regulatory Dose Limit
Average skin dose (mSv)	0.03	0.01	0.01	0.02	0.04	N/A
Maximum skin dose (mSv)	0.51	0.45	0.74	0.65	0.98	500 mSv/year

Appendix J5: Gentilly-1 Waste Facility

Figure J5-1 provides the average and maximum effective doses received by NEWs at Gentilly-1 Waste Facility from 2020 to 2024.

Figure J5-1: Effective doses for NEWs at G1WF from 2020 – 2024



Annual average and maximum equivalent doses to the skin for NEWs at Gentilly-1 Waste Facility from 2020 to 2024 are provided in Table J5-1.

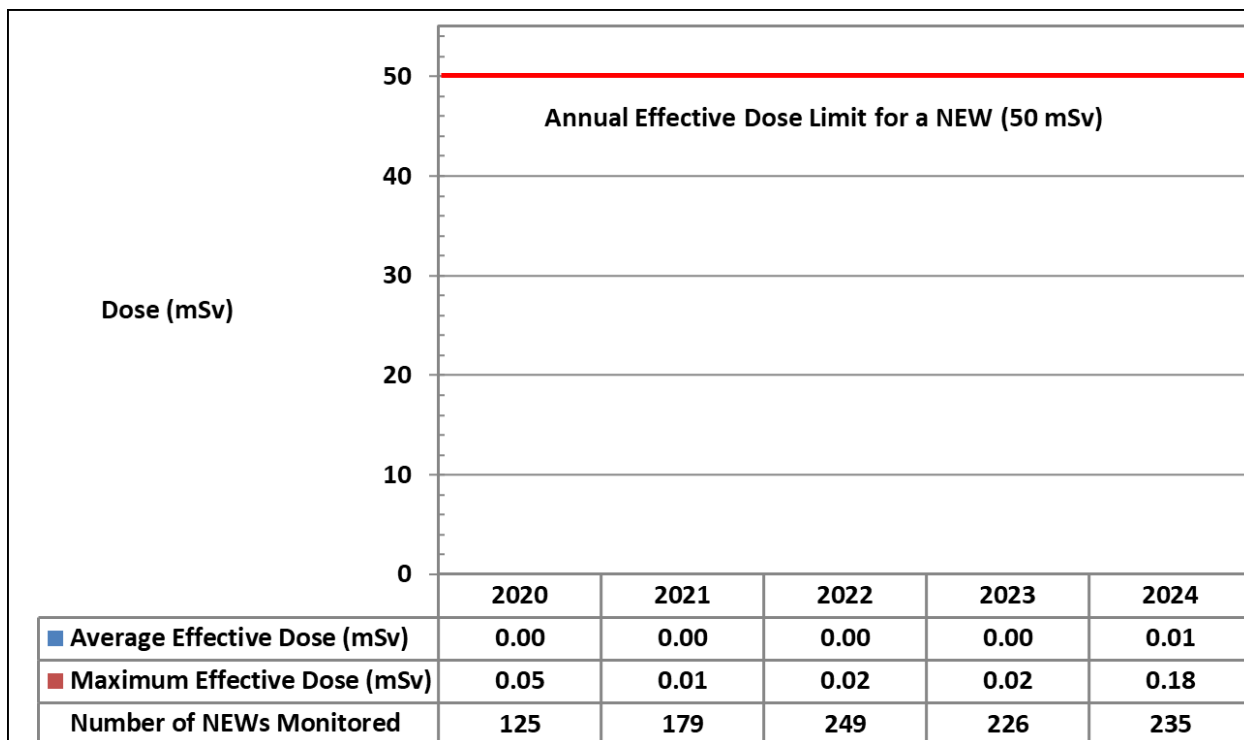
Table J5-1: Equivalent (skin) doses for NEWs at Gentilly-1 Waste Facility from 2020 – 2024

Dose Data	2020	2021	2022	2023	2024	Regulatory Dose Limit
Average skin dose (mSv)	0.00	0.01	0.00	0.02	0.01	N/A
Maximum skin dose (mSv)	0.01	0.12	0.07	0.44	0.36	500 mSv/year

Appendix J6: Nuclear Power Demonstration Waste Facility

Figure J6-1 provides the average and maximum effective doses received by NEWs at Nuclear Power Demonstration Waste Facility from 2020 to 2024.

Figure J6-1: Effective doses for NEWs at NPDWF from 2020 – 2024



Effective doses over these years are consistently low and reflect storage with surveillance (SWS) activities such as routine inspection and maintenance, as well as some hazard reduction activities.

Annual average and maximum equivalent doses to the skin for NEWs at the NPDWF from 2020 to 2024 are provided in Table J6-1.

Table J6-1: Equivalent (skin) doses for NEWs at NPDWF from 2020 – 2024

Dose Data	2020	2021	2022	2023	2024	Regulatory Dose Limit
Average skin dose (mSv)	0.00	0.01	0.00	0.00	0.01	N/A
Maximum skin dose (mSv)	0.05	0.01	0.02	0.02	0.18	500 mSv/year

Appendix K: Participant Funding Awarded for the 2024 Regulatory Oversight Report

The Canadian Nuclear Safety Commission (CNSC) established the Participant Funding Program (PFP) in 2011 to:

- enhance individual, not-for-profit organization and Indigenous Nations and Communities participation in the CNSC's environmental assessment (EA) and licensing processes for major nuclear facilities (e.g., uranium mines, nuclear power plants, nuclear substance processing, or nuclear waste facilities);
- assist individuals, not-for-profit organizations and Indigenous Nations and Communities to bring value-added information to the Commission through informed and topic-specific interventions (i.e., new, distinctive and relevant information that contributes to a better understanding of the anticipated effects of a project).

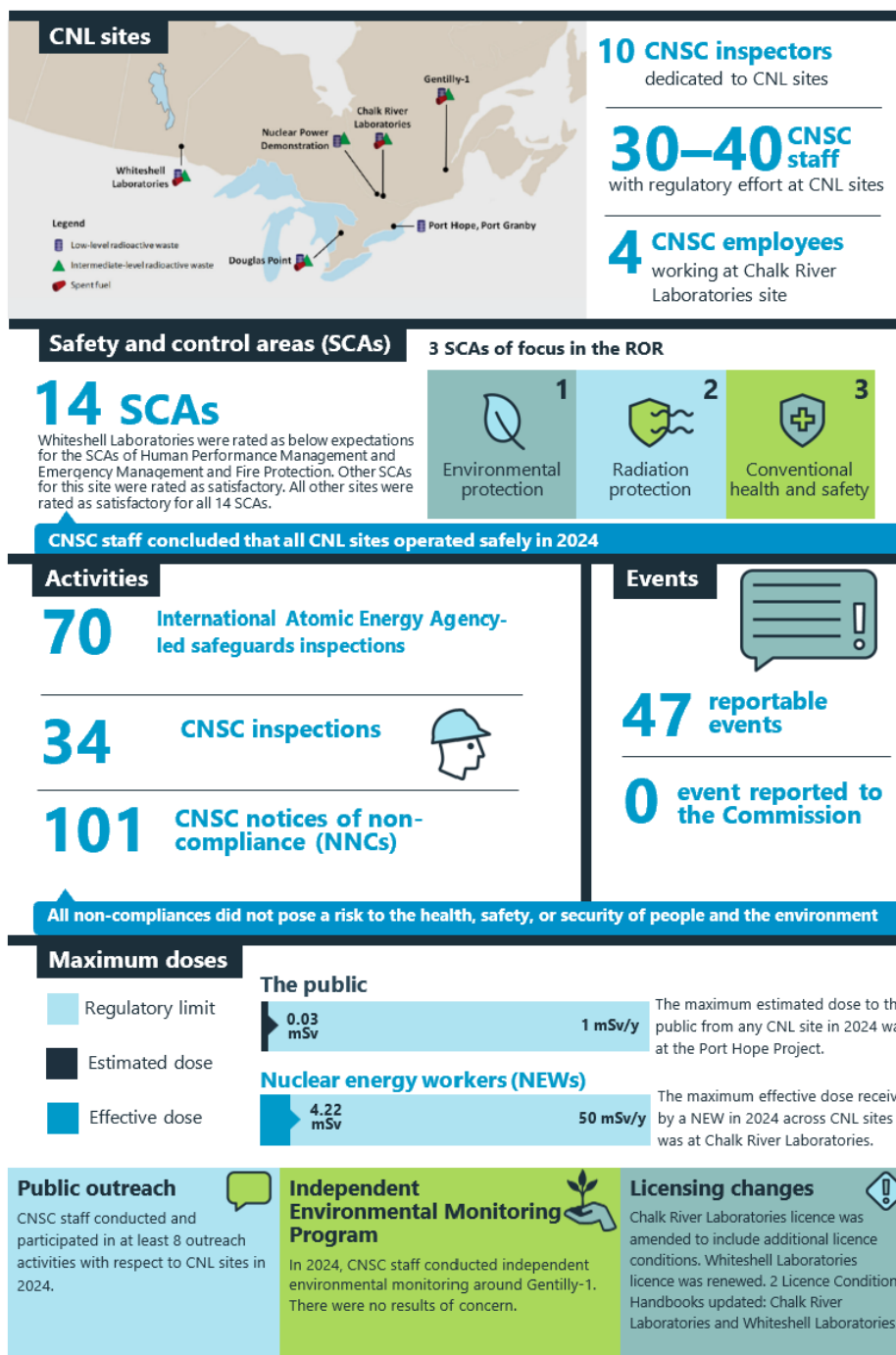
The CNSC offered participant funding to review and submit comments to the Commission on CNSC staff's 5 regulatory oversight reports (RORs) for the 2024 calendar year, including this report. The details of this offering can be found in the online announcement, [here](#).

[Learn more about the CNSC Participant Funding Program](#)

Appendix L: ROR Dashboard

Regulatory Oversight Report (ROR) Dashboard of Canadian Nuclear Laboratories Sites: 2024

This dashboard gives an overview of the safety performance of Canadian Nuclear Laboratories (CNL) sites and the efforts of the Canadian Nuclear Safety Commission (CNSC) to ensure the safety and protection of the people and the environment around the sites in 2024.



Appendix M: Select Websites

Canadian Nuclear Laboratories - <http://www.cnl.ca/>

Canadian Nuclear Safety Commission - <http://www.nuclearsafety.gc.ca>

CNL Annual Compliance Monitoring Reports via the CNL website -
<https://www.cnl.ca/environmental-stewardship/performance-reporting/>

CNL Regulatory Oversight Reports via the CNSC website -
<http://www.nuclearsafety.gc.ca/eng/resources/publications/reports/regulatory-oversight-reports/CNL-sites.cfm>

Information on CRL via the CNSC website- <http://nuclearsafety.gc.ca/eng/reactors/research-reactors/nuclear-facilities/chalk-river/index.cfm>

CSA Group - www.csagroup.org/

CSA Group via the CNSC website - <https://nuclearsafety.gc.ca/eng/acts-and-regulations/regulatory-documents/csa-standards.cfm>

Information on WL via the CNSC website- <http://nuclearsafety.gc.ca/eng/reactors/research-reactors/other-reactor-facilities/whiteshell-laboratories.cfm>

Information on DPWF via the CNSC website- <http://nuclearsafety.gc.ca/eng/reactors/research-reactors/other-reactor-facilities/douglas-point-waste-facility.cfm>

Information on G1WF via the CNSC website- <http://nuclearsafety.gc.ca/eng/reactors/research-reactors/other-reactor-facilities/gentilly-1-facility.cfm>

Information on NPDWF via the CNSC website-
<http://nuclearsafety.gc.ca/eng/reactors/research-reactors/other-reactor-facilities/nuclear-power-demonstration.cfm>

CNSC's SCA framework via the CNSC website-

1. <http://www.nuclearsafety.gc.ca/eng/resources/publications/reports/powerindustry/safety-and-control-areas.cfm>

2. <http://www.nuclearsafety.gc.ca/eng/resources/news-room/feature-articles/safety-and-control-areas.cfm>

Action Levels (AL) via the CNSC website- <http://www.nuclearsafety.gc.ca/eng/resources/news-room/feature-articles/radiation-dose-limits-release-limits-and-action-levels.cfm>

2024 Annual radionuclides via CNSC Open Government Portal-
<https://open.canada.ca/data/en/dataset/6ed50cd9-0d8c-471b-a5f6-26088298870e>

Independent Environmental Monitoring Program (IEMP) via CNSC website- <https://www.cnsccsn.gc.ca/eng/resources/maps-of-nuclear-facilities/iemp/>