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managed by Brookhaven Science Associates for the U.S. Department of Energy

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Ms. Adriana Morocho Federal Facilities Section U.S. EPA – Region II 290 Broadway – 18th Floor New York, New York 10007-1866

Mr. Alexander Klein New York State Department of Environmental Conservation Division of Environmental Remediation 625 Broadway – 12th Floor Albany, New York 12233

Dear Ms. Morocho and Mr. Klein:

SUBJECT: BROOKHAVEN NATIONAL LABORATORY INTERAGENCY AGREEMENT -ANNUAL LAND USE AND INSTITUTIONAL CONTROLS EVALUATION

In accordance with Section 5.0 of the Brookhaven National Laboratory (BNL) *Land Use Controls Management Plan (LUCMP)*, an annual letter report is submitted to the regulatory agencies to provide an evaluation of the status of the land use and institutional controls (LUICs) and describe how any LUIC deficiencies or inconsistent uses have been addressed. This letter report also provides a certification that institutional and engineering controls remained in place and were unchanged during the previous year for the High Flux Beam Reactor (HFBR), the Brookhaven Graphite Research Reactor (BGRR), and the g-2 and Brookhaven Linac Isotope Producer (BLIP) source area caps.

During calendar year 2024, all required LUIC inspections were performed, and there were no activities observed that impacted the protectiveness of the cleanup remedies. The institutional controls (ICs) that were evaluated included adherence with BNL procedures (e.g., Work Planning and Excavation Safety Subject Areas), as well as the review of fact sheets and maps that identify specific controls and restrictions by remediation area. Field inspections were performed to assess the effectiveness of the institutional controls (e.g., access restrictions) for each area.

A summary of the status of the controls, identification of any deficiencies or inconsistent uses, and how they were addressed this past year is discussed briefly below:

BNL Management System IC Reviews:

The BNL Facilities and Operations (F&O) Environmental, Security, Safety and Health procedure 500A Environmental Review and the BNL Excavation Safety subject areas are two standard operating procedures (SOPs) that provide for a review of LUICs prior to any digging or major construction activities across the site. During the year, approximately 128 digging permits for various work activities were reviewed for IC requirements. Approximately 14 of these permits were initiated by BNL's Groundwater Protection Group (GPG), primarily related to the installation

of new monitoring wells, temporary vertical profile wells, and temporary Geoprobe[®] wells and soil borings. Some of the more significant reviews of IC requirements performed included:

- The digging permit and LUIC process identified several areas of proposed work related to the replacement of steam piping and building demolition that coincided with or were near to areas of known or suspected per- and polyfluoroalkyl substance (PFAS) contaminated soil. The controls specified in the digging permits required that the excavated soil must be returned to the excavation and remain in the area, and that any excess soil or material that was generated must be properly stockpiled and covered pending further characterization. In each case, the excavated soil was able to be placed back in its excavation and no excess soil was generated.
- Work planning for the demolition of a modular building adjacent to Building 830 identified potentially radiologically contaminated buried piping that required consultation with the Radiological Controls Division to ensure that appropriate surveys were performed and that management controls were in place for excavation and replacement of excavated soils.
- A digging permit to utilize soil from the grass area adjacent to the Central Steam Facility (Building 610) as a borrow pit in the event of a release or spill from the Major Petroleum Facility (MPF) was approved. The area has been historically selected and permitted as a borrow pit for these purposes based on the area's proximity and accessibility to the MPF. The area is also a potential PFAS source area and is included in Operable Unit (OU) X Sub-Area of Concern (AOC) 33F. The controls stipulated in the digging permit include that if soil is required in the event of a release to establish berms to control the spill, soil stockpiles maintained on East Princeton Avenue will be utilized first if possible. If that is not possible, feasible, or additional soil is required, the soil from the borrow pit area adjacent to Building 610 may then be utilized.
- Planned work in several areas of the site had the potential for encountering unexploded ordnance (UXO). The GPG informed the respective project managers of the potential risks through the digging permit process and to inform the dangers relating to UXO's. The Rev 5 LUCMP documents the process when encountering potential UXO's.
- Other IC reviews were performed for various planned activities across the site including water and electrical underground infrastructure repairs, sign installations, road and walkway repairs, and building construction. In several cases ICs were noted on the digging permits for former landscape soil areas and remediation system utility lines.

LUIC Website Fact Sheets and Maps:

LUIC fact sheets and maps are reviewed and updated as necessary as part of the LUIC inspections. During 2024, the LUIC website map was updated to include the 2023 Volatile Organic Compound (VOC), radiological, and PFAS groundwater plume contours, and the as-built piping for the OU X Current Firehouse and Former Firehouse groundwater treatment systems. No updates to the LUIC Fact Sheets were made in 2024.

Field Inspections:

Based on Section 5.0 of the LUCMP and the LUIC inspection details described in Section 2.1 of the BNL *Soil and Peconic River Surveillance and Maintenance Plan*, field inspections of the various remediation areas are conducted either annually or semi-annually. These inspections were performed in May/June and November 2024. There were no breaches of the ICs observed. However, conditions observed that required follow-up actions included:

• Several animal burrows at both the Current and Former Landfills were filled during 2024. The burrows did not penetrate past the protection layer of the caps.

Overall, the current land use for the areas inspected remains protective and consistent with the remedial action objectives identified in their respective Records of Decision (RODs).

Access Agreements:

A key IC for the groundwater treatment systems located off the BNL property is to ensure that the property access agreements are in place and have not been violated. To date, the requirements of the existing access agreements have been met, including communicating the LUICs and restrictions to the property owners, and the use of the properties has conformed to these controls.

Brookhaven Science Associates (BSA) Legal and PSEG of Long Island continued their discussions to renew the LIPA property access agreement that expired in March 2018. The Town of Brookhaven license agreement was modified in June 2023 to include the Industrial Park treatment system. This license was also extended for a period of ten years (through 2033) and will allow for BNL's continued access to operate and maintain groundwater treatment system related infrastructure.

Reactor Projects:

<u>HFBR:</u> Routine surveillance and maintenance (S&M), including quarterly inspections of the HFBR confinement building, was performed during 2024 in accordance with the *HFBR S&M Manual* (Revised September 2023). The annual structural/roof inspection of the HFBR was completed in December 2024.

The inside of the building was generally dry during the inspections except for moisture observed on the floor of the generator room following heavy precipitation events and in an area below the inactive fire suppression system. Based on observation, the water appeared to have been residual water remaining within the fire system piping that had dripped from a worn connection at a low point. The water accumulation was not significant and was not observed during follow-up entries. Work continues with BNL F&O to identify and eliminate the source of the water in the generator room. The confinement dome leak detection system was tested, and two of the five leak detectors were found to not be operational. Follow-up entries were performed in December 2024 to further diagnose the issue and make the necessary repairs. Overall, the interior and exterior of the HFBR remain in good condition and there were no significant issues identified. Following an earthquake on April 10, 2024 centered in northern New Jersey and measuring approximately 3.5-4 on the Mercalli Scale, a post-earthquake inspection was performed and did not identify any observable damage to the facility.

<u>BGRR</u>: Routine S&M of the BGRR was performed in 2024 in accordance with the *BGRR S&M Manual* (Revised September 2023). Quarterly inspections were conducted of the high bay and former offices. Annual inspections were performed of the engineered cap in December 2024, the below ground ducts in April 2024, and the structural and roof in February 2025. The Structural and roof inspection were postponed to early 2025 due to weather. These inspections will also be performed again as scheduled in the fourth quarter 2025.

The high bay and office inspections detected only minor issues including some accumulated water on the floor of the HVAC mechanical room and a deteriorated drywell in the east office of the third floor. Upon inspection of the roof, it was evident that the roof drain near the mechanical room was clogged and the likely source of the water in this location, and that water entering along a roof seam on the knee wall was allowing water to enter the third-floor office. Work orders were placed to make the necessary repairs. The roof and knee wall were sealed, and subsequent inspections indicated that the repairs appeared to have resolved the issue in the third-floor offices; however, the lower roof will likely need replacement in the near future. The work to clear the clogged drain will be completed in 2025. Similar to above, a post-earthquake inspection was performed in April 2024 and did not identify any observable damage to the facility. Some vegetation in the engineered cap was removed by F&O and repairs were made to replace a rusted portion of the west rollup door. The annual structural and roof condition inspection indicated that the existing building structure components are all in good to very good condition, with several minor deficiencies which do not pose an immediate threat to the structural

integrity of the building. These deficiencies include membrane tears in the lower and upper roof membranes, and a broken window on the west bay window bank. The Building 701 leak detection system was tested and found to be working properly and no significant water accumulation or other changes in conditions were observed. In February 2024, a Memorandum of Understanding (MOU) was signed between the BNL Instrumentation Division and the EPD for access to the roof of Building 701 for the Quantum Network Experiment.

g-2 and BLIP Source Area Caps:

Visual inspections of the g-2 and BLIP source area caps were performed as required by the g-2 Tritium Source Area and Groundwater Plume, BLIP, and Former Underground Storage Tanks ROD.

The g-2 cap was inspected in January and February of 2024, and January 2025. All inspection criteria were found to be satisfactory during these inspections. Maintenance cutting of grass and vegetation was performed during the year. Some small cracks judged to be inconsequential to cap integrity, were noted and will be addressed in 2025 when weather permits. Previously noted ponding of water in one area of the cap had not deteriorated.

The BLIP and LINAC Y caps were inspected in October and December 2024. The October inspection noted the need for normal maintenance weed removal and sealing on the Linac Y Cap. The December inspection noted minor cracks and weed growth. These issues were found not to affect the integrity of the cap. Maintenance repairs will be completed when weather conditions allow.

In summary, the institutional and engineered controls for both source areas are in place, and nothing has occurred in 2024 that would impair the ability of the controls to protect public health and the environment or constitute a violation or failure to comply with the LUCMP.

Documentation for all inspections associated with the LUICs, reactor S&M and g-2/BLIP cap activities are maintained in accordance with records retention policies and are available for review upon request.

If you have any questions or need any further information, please call me at (631) 344-3477 or Brian Barth at (631) 344-2242.

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