UNITED STATES
NUCLEAR REGULATORY COMMISSION
WASHINGTON, D.C. 20555-0001

November 17, 2021

Ms. Brigid D. Lowery, Director
Assessment and Remediation Division
Office of Superfund Remediation
and Technology Innovation
U.S. Environmental Protection Agency
M.S. 5201P
1200 Pennsylvania Avenue, NW
Washington, DC 20004

SUBJECT: COMPLETION OF SCHEDULED DECOMMISSIONING ACTIVITIES AT THE HUMBOLDT BAY POWER PLANT, UNIT 3 NEAR EUREKA, CALIFORNIA (NRC LICENSE NO. DPR-7)

Dear Ms. Lowery:

I am writing to inform you of the completion of the active onsite decommissioning activities at the Pacific Gas and Electric's (PG&E's) Humboldt Bay Power Plant (HBPP), Unit 3, located near Eureka, California and the U.S. Nuclear Regulatory Commission (NRC) staff's decision that further consultation with the U.S. Environmental Protection Agency (EPA) according to EPA - NRC Memorandum of Understanding (MOU), "Consultation and Finality on Decommissioning and Decontamination of Contaminated Sites," dated, October 9, 2002 (Agencywide Documents Access and Management System [ADAMS] Accession No. ML022830208) is not needed before license termination.

PG&E submitted a total of 11 separate Final Status Survey Reports (FSSRs) between March 9, 2017 and August 8, 2021. On November 3, 2021, the NRC completed reviewing, the last remaining HBPP, Unit 3 FSSRs for the remediated portions of the site (ADAMS Accession No. ML21299A235). In a letter dated October 21, 2021 (ADAMS Accession No. ML21294A421), PG&E submitted a request to terminate the HBPP, Unit 3 reactor license following completion of decontamination, decommissioning, and final survey activities, and contingent upon NRC approval of the remaining FSSRs.

The NRC approval of all the FSSRs marks[1] the completion of decommissioning activities at HBPP, Unit 3. We are in the final stages of our review of PG&E's license termination request and expect to issue a license termination decision later this month. Currently, we are coordinating for awareness with the State of California (ADAMS Accession No. ML21293A242) to terminate NRC License No. DPR-7 for the HBPP, Unit 3 site and release the site for unrestricted use. The Independent Spent Fuel Storage Installation license is a specific license and will remain in effect until the spent fuel is dispositioned.

[1] ADAMS Accession Nos: ML18155A300, ML18278A087, ML19319A566, ML20030A099, ML21214A100, ML21225A772, ML21225A775, and ML21299A235.

The license termination will be completed in accordance with the NRC-approved PG&E HBPP, Unit 3 License Termination Plan (LTP) which requires the evaluation of the FSSRs, among other things, as part of the license termination process. Based on the NRC staff's approval of the FSSRs, the NRC staff preliminarily concludes, pending completion of the license termination request, that the FSSRs support PG&E's termination request. More specifically, the NRC staff has preliminarily determined that each FSSR demonstrates that each of the HBPP, Unit 3, survey units is acceptable to release for unrestricted use in accordance with, "Radiological Criteria for License Termination," of Part 20, "Standards for Protection Against Radiation," to Title 10 of the *Code of Federal Regulations* (10 CFR), Subpart E for unrestricted release.

The above-mentioned NRC-EPA MOU provides that, unless an NRC-licensed site exceeds any of three trigger criteria, the EPA agrees to a policy of deferral to NRC decision making on decommissioning, without the need for consultation. For sites that trigger the criteria in the MOU, the NRC will consult with the EPA at two points in the decommissioning process:

(1) prior to NRC approval of the LTP or Decommissioning Plan, which the NRC terms Level 1 consultation; and

(2) following completion of the final status survey (FSS), which the NRC terms Level 2 consultation.

In 2014, consistent with the MOU, the NRC staff evaluated the LTP application to determine whether a Level 1 consultation was required.[2] The NRC consulted with the EPA on July 7, 2014 (ADAMS Accession No. ML14128A228) because the site met one of the Level 1 consultation trigger criteria. Under the MOU, the agencies (NRC and EPA) will consult with each other pursuant to the provisions of the MOU with respect to those sites presenting the circumstances described in Sections V.C.2 and V.C.3 of the MOU. More specifically, the licensee proposed derived concentration guideline levels (DCGLs)[3] for twenty-two radionuclides for HBPP, Unit 3. When reviewing the HBPP, Unit 3 LTP application, the NRC staff identified that the proposed DCGLs for four of the site radionuclides of concern (europium [Eu]-152, Eu-154, hydrogen-3, and niobium-94) exceeded the soil concentration levels in Table 1[4] of the MOU for the land use

[2] The NRC reviewed and approved the PG&E LTP in 2016 (ADAMS Accession No. ML15090A339), as amended in June 2021 (ADAMS Accession No. ML21158A123 [Pkg.]), and as corrected on July 8, 2021 (ADAMS Accession No. ML21189A072 [Pkg]). The LTP amendment and the subsequent correction to the licensing amendment, did not require review of the MOU because the changes were not associated with the determination of derived concentration guideline levels or the comparison to Table 1 values.

[3] A DCGL is the "derived concentration guideline level" for residual radioactivity in soil that corresponds to the dose based regulatory release criteria (normally, 25 mrem/y for unrestricted release per 10 CFR 20.1402). DCGLs are determined by performing a pathways analysis to estimate the potential dose for a future site occupant out to 1,000 years post license termination. A DCGL is developed for each significant radionuclide of concern that is likely to be present as residual radioactivity at a site and, if there are more than one, a sum-of-fractions (SOF) is calculated to ascertain whether the concentrations measured in soil meet the DCGLs. Typically, the average concentrations of radionuclides of concern, as measured by sampling, are divided by the respective DCGL, and summed. So long as the SOF is less than unity, the DCGLs are considered to be met (a SOF of 1 usually corresponds to the dose basis used to derive the DCGLs). The SOF is sometimes known as the "unity rule" (see footnote 5).

[4] Per the MOU, Table 1: "Except for radium-226, thorium-232, or total uranium, concentrations should be aggregated using a SOF approach to determine site specific consultation trigger concentrations. This table is based on single contaminant concentrations for residential and commercial/industrial land use when using generally accepted exposure parameters. Table users should select the appropriate column based on the site's reasonably anticipated land use.".

scenarios. This means that there would be a possibility of the average residual radioactivity complying with the site derived DCGLs for NRC regulatory compliance purposes yet exceeding the Table 1 values[5] such that the site met one of the consultation triggers. The NRC stated in its consultation letter that, following the completion of NRC's review of the HBPP FSSRs:

> "If the FSS measurements show that the remaining radionuclide concentrations are below the values set forth in Table 1 of the MOU, then the NRC will proceed to terminate the HBPP, Unit 3 license and the site will be released for unrestricted use. The NRC will inform the EPA of such findings. If the FSS measurements show that any of the remaining radionuclide concentrations are above the values set forth in Table 1 of the MOU, then the NRC will engage in Level 2 consultation with the EPA to identify and resolve any remaining issues."

Regarding groundwater, in the NRC's Level 1 consultation with EPA, the NRC staff did not request EPA consultation on groundwater because: "there [was] no waterborne pathway as the groundwater is saline and is not used now, nor likely to be used in the future, for either direct consumption or for agricultural purposes. Therefore, the NRC is not requesting a consultation on groundwater."

Following completion of the review and approval of the FSSRs, the NRC staff evaluated the FSS measurements to determine whether they would trigger the need for a Level 2 consultation. Based on this evaluation, the NRC staff concluded that a Level 2 consultation is not needed because the average concentration (calculated from final status survey data) of each radionuclide of concern within each survey unit in all FSSRs, is below the values set forth in Table 1 of the MOU and, when applying the SOF approach, described above (in footnote 4), the SOF is significantly below unity for every survey unit. Therefore, the site did not meet the trigger that necessitates Level 2 consultation. It also did not meet the other triggers in the MOU.

That said, the NRC staff wishes to inform the EPA that there were a few small areas of elevated residual radioactivity left on the site, one of which is further described because it is an anomaly from what is typically considered in regulatory guidance. Specifically, the licensee had four dewatering wells to allow excavation of the Caisson structure and commodities. The pump in one well in the excavation failed such that the well became a point for groundwater recharge although the remaining wells continued operating for dewatering purposes. Solids/silt accumulated in the well, and its surrounding gravel pack, at approximately 100 feet below final site grade. Although, two individual samples of the accumulated material in the well exceeded the concentrations in Table 1 of the MOU, the site survey unit averages did not exceed the concentrations in Table 1 of the MOU. While the material in the well was subsequently purged and disposed of as waste, and the well closed, residual material in the surrounding gravel pack remains. This situation was evaluated by the licensee to determine a hypothetical dose contribution to future site occupants. The NRC staff reviewed the licensee's evaluation and

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[5] The term "unity" is in reference to the unity rule (mixture rule) as defined in NUREG-1575, Rev. 1. EPA 402-R-97-016, Rev. 1., DOE/EH-0624, Rev. 1. Multi-Agency Radiation Survey and Site Investigation Manual, August 2000. A rule applied when more than one radionuclide is present at a concentration that is distinguishable from background and where a single concentration comparison does not apply. In this case, the mixture of radionuclides is compared against default concentrations (DCGLs for NRC dose demonstration purposes and Table 1 values for by applying the unity rule. This is accomplished by determining: 1) the ratio between the concentration of each radionuclide in the mixture, and 2) the concentration for that radionuclide in an appropriate listing of default values. The sum of the ratios for all radionuclides in the mixture should not exceed 1 or unity. The SOF that is used for NRC's FSSR reviews is different than the SOF for the MOU (the concept is generally the same, but the details of the MOU equation are distinct as noted in footnote 4).

found it conservatively addressed the potential dose contribution from the material as documented in a Safety Evaluation Report (see ADAMS Accession No. ML21214A101). Given the material's inaccessibility because of its depth below final grade, as documented in the Safety Evaluation Report referenced in the previous sentence, the NRC staff determined it was very unlikely it could convey significant dose to future site occupants.

The licensee states in its request for license termination that no HBPP related radionuclide contamination was detected in groundwater during active decommissioning at HBPP. The NRC staff concluded that a Level 2 consultation is not required for groundwater for the same reasons given in its Level 1 consultation. To provide additional support to its conclusion, the NRC staff also performed further evaluation using the typical minimum detectable concentrations (MDCs) of the licensee's laboratory analysis. Specifically, the NRC staff used these MDCs to perform an independent dose assessment for potential ingestion of groundwater that determined the dose through the groundwater pathway is bounded at 1 mrem/yr total effective dose equivalent. The NRC staff considers the bounding estimate to be conservative due to groundwater at the site not being considered a potable water source.

In accordance with 10 CFR 2.390 of the NRC's "Agency Rules of Practice and Procedure", a copy of this letter is available for inspection at the Public Document Room Monday-Friday by appointment or electronically from the Publicly Available Records component of ADAMS. ADAMS is accessible from the NRC Web site at https://www.nrc.gov/reading-rm/adams.html. To schedule an appointment to visit the Public Document Room, please email PDR.Resource@nrc.gov or call 1-800-397-4209.

If you or your staff have any questions regarding this letter, or the ongoing license termination activities at the HBPP, Unit 3 site, please contact Amy Snyder, at 301-415-6822 or via email at Amy.Snyder@nrc.gov.

Sincerely,

Signed by Marshall, Jane
on 11/17/21

Jane E. Marshall, Director
Division of Decommissioning, Uranium Recovery,
and Waste Programs
Office of Nuclear Material Safety
and Safeguards

Docket No.: 50-133
License No.: DPR-7

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Completion of Scheduled Decommissioning Activities at the Humboldt Bay Power Plant, Unit 3 Near Eureka, California (License No. DPR-7) DATE November 17, 2021

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