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

September 23, 2024

Christopher D. Wilson, Director
License Renewal
Constellation Energy Generation, LLC
200 Exelon Way
Kennet Square, PA 19348

SUBJECT: DRESDEN NUCLEAR POWER STATION, UNITS 2 AND 3 – LICENSE RENEWAL REGULATORY AUDIT REGARDING THE ENVIRONMENTAL REVIEW OF THE LICENSE RENEWAL APPLICATION (EPID NUMBER: L-2024-SLE-0002) (DOCKET NUMBERS: 50-237 AND 50-249)

Dear Director Christopher D. Wilson:

By letter dated April 17, 2024 (Agencywide Documents Access and Management System ML24108A007), Constellation Energy Generation, LLC, submitted an application for subsequent license renewal of Renewed Facility Operating License Nos. DPR-19 and DPR-25 for Dresden Nuclear Power Station, Units 2 and 3 (Dresden), to the U.S. Nuclear Regulatory Commission (NRC), pursuant to Section 103 of the Atomic Energy Act of 1954, as amended, and Part 54 of Title 10 of the *Code of Federal Regulations*, "Requirements for renewal of operating licenses for nuclear power plants."

The NRC staff has initiated the environmental review for the application. A Severe Action Mitigation Alternatives (SAMA) virtual audit will be conducted the week of September 30, 2024, and a virtual environmental audit will be conducted the week of October 21, 2024, by NRC staff (see Enclosure 1). An on-site audit maybe held the week of December 9, 2024, depending on the outcome of the virtual SAMA and environmental audit. The purpose of the audit is to gather information needed for the development of the EIS, pursuant to NRC "Regulatory Audit" guidance.

To the extent possible, the NRC staff requests the information identified in the Environmental Audit Needs List (Enclosure 2) be made available on the Dresden online reference SharePoint. A draft schedule of virtual tours and meetings is provided in Enclosure 3.

If you have any questions on this matter, please contact Tam Tran via email at tam.tran@nrc.gov

Sincerely,

Signed by Tran, Tam
on 09/23/24

Tam Tran, Environmental Project Manager
Environmental Project Management Branch 1
Division of Rulemaking, Environmental,
and Financial Support
Office of Nuclear Material Safety
and Safeguards

Docket Nos. 50-237 and 50-249

Enclosures: As stated

cc w/encls: Listserv

SUBJECT: DRESDEN NUCLEAR POWER STATION, UNITS 2 AND 3 – LICENSE RENEWAL REGULATORY AUDIT REGARDING THE ENVIRONMENTAL REVIEW OF THE LICENSE RENEWAL APPLICATION (EPID NUMBER: L-2024-SLE-0002) (DOCKET NUMBERS: 50-237 AND 50-249)

DATE: SEPTEMBER 23, 2024

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Audit Plan

License Renewal Environmental Review Dresden Nuclear Power Station Units 2 and 3

September 2024

Division of Materials and License Renewal
Office of Nuclear Reactor Regulation
U.S. Nuclear Regulatory Commission

Enclosure 1

License Renewal Environmental Review Dresden Nuclear Power Station Unit 2 and 3

1. Background

By letter dated April 17, 2024 (Agencywide Documents Access and Management System ML24108A007), Constellation Energy Generation, LLC, submitted an application for subsequent license renewal of Renewed Facility Operating License Nos. DPR-19, and DPR-25 for Dresden Nuclear Power Station, Units 2 and 3 (Dresden), to the U.S. Nuclear Regulatory Commission (NRC), pursuant to Section 103 of the Atomic Energy Act of 1954, as amended, and Part 54 of Title 10 of the *Code of Federal Regulations*, "Requirements for renewal of operating licenses for nuclear power plants. A *Federal Register* (*FR*) Notice (89 FR 38197) dated May 7, 2024, noted the receipt and availability of the application, including the environmental report (ER).
The NRC staff is conducting an environmental audit of the Dresden site to improve understanding, to verify information, and to identify information for docketing to support the preparation of an environmental impact statement (EIS). Specifically, the NRC staff will be identifying pertinent environmental data, reviewing the facility, and seeking clarifications regarding information provided in the ER.

2. Environmental Audit Bases

License renewal requirements for ERs are specified in Title 10 of the *Code of Federal Regulations* (10 CFR) Part 51, "Postconstruction environmental reports." As specified by 10 CFR 51.53(c): *Operating license renewal stage*, "(1) Each applicant for renewal of a license to operate a nuclear power plant under Part 54 of this chapter shall submit with its application a separate document entitled "Applicant's Environmental Report—Operating License Renewal Stage." Review guidance for the staff is provided in NUREG–1555, Supplement 1, Revision 1, "Standard Review Plans for Environmental Reviews for Nuclear Power Plants: Supplement 1 – Operating License Renewal."

On August 6, 2024, the NRC published a final rule (89 FR 64166) revising its environmental protection regulation, 10 CFR part 51, "Environmental protection regulations for domestic licensing and related regulatory functions." The final rule updates the potential environmental impacts associated with the renewal of an operating license for a nuclear power plant for up to an additional 20 years for either an initial license renewal or SLR. Revision 2 to NUREG-1437, "Generic Environmental Impact Statement for License Renewal of Nuclear Plants" (LR GEIS) (ML24087A133) provides the technical basis for the final rule. The revised LR GEIS specifically supports the updated list of environmental issues and associated environmental impact findings contained in table B-1 in appendix B to subpart A of the revised 10 CFR part 51 for both initial license renewals and first SLRs.

The final rule became effective for the NRC staff on September 6, 2024, and staff must now consider the new and modified issues, as applicable, in its license renewal EISs. Accordingly, the NRC staff intends to prepare a plant-specific supplement to the LR GEIS for the Dresden SLR application (SEIS). The SEIS will rely on the LR GEIS determinations for Category 1 issues. Site-specific information will be considered only on Category 2 issues and screened for new and significant information on Category 1 issues.

3. Environmental Audit Scope

The scope of this environmental audit is to identify new and significant issues and issues which can be eliminated from further study. The NRC staff will also identify environmental resources

that must be described and evaluated in the Supplemental EIS. Audit team members will review the documents and other requested information made available on the Dresden online reference portal Identified on the environmental audit needs list (Enclosure 2) and discuss any questions and additional information needs with the applicant's subject matter experts.

4. Information and Other Material Necessary for the Environmental Audit

As identified on the environmental audit needs list (Enclosure 2).

5. Environmental Audit Team Members and Resource Assignments

The environmental audit team members and their assignments are shown in the table below.

Discipline	Team Members
Environmental Review Supervisor	Steve Koenick
Environmental Project Manager	Tam Tran
Support Environmental Project Manager	Angela Sabet
Air Quality	Nancy Martinez
Aquatic Resources	Mitchell Dehmer, Briana Arlene
Cumulative Impacts	Brian Glowacki
Environmental Justice	Caroline Hsu, Jeff Rikhoff
Federally Protected Ecological Resources	Shannon Healy, Briana Arlene
Geologic Environment	Gerry Stirewalt
Greenhouse Gases/Climate Change	Nancy Martinez
Groundwater (Hydrology and Hydrogeology)	Gerry Stirewalt
Historic and Cultural Resources	Jenny Davis
Human Health	Don Palmrose
Land Use and Visual Resources	Caroline Hsu
Meteorology and Climatology	Nancy Martinez
Noise	Nancy Martinez
Postulated Accidents	Charles Moulton, Jerry Dozier
Replacement Power Alternatives	Brian Glowacki
Severe Accident Mitigation Alternatives	Charles Moulton, Jerry Dozier
Socioeconomics	Caroline Hsu
Spent Nuclear Fuel	Leah Parks
Surface Water	Lloyd Desotell
Termination of Operations and Decommissioning	Rao Tammara
Terrestrial (Land Cover and Habitat)	Caroline Hsu
Uranium Fuel Cycle	Rao Tammara
Waste Management (rad and non-rad)	Leah Parks

6. Logistics

A Severe Accident Mitigation Alternatives virtual audit will be held the week of September 30, 2024, and an environmental audit will be held the week of October 21, 2024, both will be conducted by NRC staff. An entrance meeting will be held at the beginning of the audit and an exit meeting will be held following the virtual audit. There will also be a daily debriefing meeting held between the NRC and Constellation Environmental Project Managers to review and finalize all action items discovered during virtual audit.

7. Special Requests

Constellation staff and contractors who are subject matter experts in the disciplines identified on the environmental audit needs list should be available for interviews and tours.

8. Deliverables

An audit summary report will be issued by the NRC staff within 90 days from the end of the environmental audit.

Dresden Nuclear Power Plant Unit 2 and 3

Audit and Information Needs

Described below in three categories (i.e., tours, meetings, and information needs) are the information needs of the U.S. Nuclear Regulatory Commission (NRC) staff, supported by Pacific Northwest National Laboratory (PNNL), Dresden Nuclear Power Plant Unit 2 and 3 (Dresden). Information needs are identified as either resource-specific questions or document requests. Please arrange for the virtual walk-through and meetings specified below to occur during the virtual environmental audit. Additionally, we ask that you provide responses to the information needs on the SharePoint and make subject matter experts (SME) available to discuss these items with the NRC staff.

Virtual Tours (Microsoft Teams Sessions)

Please arrange for and provide appropriate SMEs to support the following virtual walk-through. For the virtual tours, please provide photographs, diagrams, location maps, and/or callouts for specific components that would be of interest for the noted features.

Number and Title	Features Observed	NRC Participants	PNNL Participants
1. General site	Virtual walk-through of the following via photographs and/or diagrams: • Exterior grounds (overview) • SLR in scope Transmission lines • Alternative power generation locations that have been evaluated by Constellation • Independent Spent Fuel Storage Installation (ISFSI) • Plant views from publicly accessible areas	All	All
2. Plant intake and discharge	Virtual walk-through of the following via photographs and/or diagrams (details vary by location): • Intake surrounding area views • Intake bays • Intake traveling screens and trash baskets • Cooling Water Intake System (CWIS) system pathway from intake to discharge • Discharge flume [beginning, overview of flume, and ending at Illinois River blowdown (indirect	Mitchell Dehmer, Briana Arlene, Leah Parks Gerry Stirewalt Lloyd Desotell	Caitlin Wessel, Rajiv Prasad, Stephen Ferencz

Number and Title	Features Observed	NRC Participants	PNNL Participants
	open cycle) and/or intake canal (closed cycle)] • Discharge terminus (grates, gating, mesh, weir) • Discharge surrounding area views • Onsite Illinois Department of Natural Resources (IDNR) hatchery ponds • Mechanical draft Cooling Towers • Dresden Pool and Dam • National Pollutant Discharge Elimination System (NDPES) outfalls (in particular, describe Outfall 002 discharges)		
3. Radwaste	Virtual walk-through of the following via photographs and/or diagrams: • Liquid radwaste system - discharge locations • Gaseous radwaste system - discharge locations • Low-Level Radioactive Waste Storage Area (Radwaste Building) • Recent photographs of the Disposal Site approved by NRC in 2015 for 20.2002? disposal	Leah Parks, Gerry Stirewalt Lloyd Desotell	
4. Groundwater Resources	Virtual walk-through of the following via photographs and/or diagrams (details vary by location): • Sedimentation Ponds • Groundwater recovery well RW-DN-100S • B CST May 2014 tritium release location, and pathway into the storm sewer system	Gerry Stirewalt Lloyd Desotell	Phil Meyer

Meetings

Please be prepared to schedule breakout meetings with the appropriate SME(s) and/or contractor(s) concerning the following topics. Those in attendance should be prepared to discuss the corresponding questions as described in the "Information Needs and Document Requests" section below. The staff intends to use these breakout meetings, as needed, to resolve or clarify any outstanding data needs or questions arising from the environmental audit. NRC intends to leverage virtual breakouts to the extent possible, as follows:

- General Topics
- Replacement Energy Alternatives
- Land Use and Visual Resources
- Meteorology, Air Quality, and Noise
- Geologic Environment
- Water Resources (Surface and Groundwater)
- Ecological Resources (Terrestrial, Aquatic, and Federally Protected Ecological Resources)
- Historic and Cultural Resources
- Socioeconomics
- Human Health
- Environmental Justice
- Waste Management
- Greenhouse Gases and Climate Change
- Cumulative Impacts
- Postulated Accidents/Severe Action Mitigation Alternatives (SAMA)

Information Needs and Document Requests

Information needs and document requests are identified below by topic.

General (All) The following requests are generic to more than one environmental resource area. Issues applicable to these questions are provided below along with the responsible NRC and PNNL SME(s), as appropriate.

GEN-1 Please provide any relevant updates to table 9.1-1 in the Environmental Report (ER). If any authorizations have expired since the Application for Subsequent Renewed Operating License Nos. DPR-19 and DPR-25, dated April 17, 2024, please provide the status of those permits and/or renewals.

Topic-specific

The following requests are specific to a single environmental review area. If a topic is not provided below, the discussions held in response to the generic requests above are expected to fully cover that topic.

Replacement Energy Alternatives (Brian Glowacki and Bob Hoffman, NRC; Dave Goodman and Dani Young, PNNL)

Audit Needs

ALT-1 ER Section 7.2.3.2 states that "The onsite solar installation would be located within the polygons shown on Figure 7.2-1, which have a total area of approximately 306 acres." Table 8.0-2 also identifies that the solar installation would have a land requirement of 306 acres.

However, figure 7.2-1 depicts four polygons totaling 407 acres:

- 74 acres for Potential Natural Gas Plant Development
- 89 acres for Potential Solar Development
- 103 Acres for Potential Alternative Development
- 141 acres for Potential Alternative Development

Please reconcile/clarify which of the acreages depicted on figure 7.2-1 correspond with the 306 acres associated with the onsite solar installation.

Document Needs

None anticipated.

Land Use and Visual Resources (Caroline Hsu, NRC; Dave Goodman and Dani Young, PNNL)

Audit Needs

None anticipated.

Document Needs

None anticipated.

Air Quality (Nancy Martinez, NRC)

Audit Needs

AQN-1 Section 9.5.2.1 of the ER states that DNPS has an open burn permit, ID 043083, issued by the Illinois Environmental Protection Agency for the purpose of firefighter training. Discuss how this permit is related to operations at DNPS.

AQN-2 Table 3.3-10 of the ER presents annual air emission for 2018-2022. Clarify if the air emissions presented in Table 3.3-10 of the ER account of all the emission sources listed in Table 3.3-9 of the ER. If available, provide emissions for 2023.

AQN-3 Section 3.3.3.2 of the ER states that that there have been no notices of violation or non-compliance associated with DNPS air emissions from January 2018 through the end of 2023. Has CGE received any notices of violation or non-compliance associated with DNPS air emissions since 2023?

Document Needs

AQN-4 Provide a copy of Air Emission Permit No. 063806AAC and open burn permit, ID 043083.

AQN-5 Provide a copy of annual emission statements submitted to the IEPA of for the last 5 years.

Noise (Nancy Martinez, NRC)

Audit Needs

NOI-1 Section 3.4 of the ER states that in 2017, DNPS completed a two-phase noise evaluation which showed that cooling tower noise levels (58 dBA at the nearest residence) exceeded the State of Illinois code nighttime limits (51 dBA). In response, CEG decided to plant approximately 150 trees between the hot canal and the Dresden Road to reduce sound levels. The tree planting is planned to occur over 2 to 3 years.

a. Provide a copy of the 2017 two-phase noise evaluation.
b. Clarify what is meant by the statements: “Support of the planting of 150 evergreen trees between the hot and cold canal and Dresden Road is in Spring of 2024. Maintenance serves to support watering the newly planted trees near the hot and cold canal and Dresden Road from Spring 2024 through the first frost.”
c. Provide an update regarding the planting of the 150 trees. As part of the discussion, identify how many trees have been planted to date and if there have been any changes to the planned mitigation actions to reduce sound levels.
d. Since 2017, have there been any additional noise surveys conducted? Have there been any additional noise surveys since the trees have been planted? If so, please provide a copy of these noise surveys. If there have not been any additional noise surveys, does CEG plan to conduct any additional noise surveys to confirm that the planting of trees results in noise reduction to meet Illinois limits?

NOI-2 Section 3.4 of the ER states that there are 42 tower cells along the hot canal which consist of 36 hot canal tower cells that were installed in 2000 and 6 additional hot

canal tower cells that were installed in 2003. The 12 cold canal tower cells were installed in 1999. Were any noise surveys conducted prior to installing the cooling towers in 1999, 2000, or 2003 to obtain background sound measurements prior to installation and operation of the cooling towers? If so, please provide a copy of the noise survey(s).

NOI-3 Section 3.4 of the ER states that DNPS did not receive noise complaints during the last 5 years (2018-2022). Has CEG received any noise complaints with respect to DNPS operations since 2022?

NOI-4 Section 3.4 of the ER states that in the fall of 2003, an earthen berm was constructed just south of the cooling towers to attenuate noise from the towers. Please clarify which cooling towers this statement is referring to.

Document Needs

NOI-5 Provide a copy of CEG's fleetwide procedure that provides personnel with the regulatory requirements related to the Noise Control Act of 1972 (42 USC 4901), the Quiet Communities Act (42 USC 4913), and the noise control regulations of Title 40 of the *Code of Federal Regulations* (40 CFR) Parts 201-211.

Geologic Environment (Gerry Stirewalt, NRC; Phil Meyer and Kristen Chojnicki, PNNL)

Audit Needs

GE-1 Confirm that the Silurian-Devonian aquifer occurs regionally but is not present at the DNPS site.

GE-2 Describe any evidence at the site for significant fractures or joints in the Pennsylvanian Pottsville sandstone or Ordovician Maquoketa Divine limestone units.

GE-3 Information is provided on excavation depths for Units 2 and 3 turbine buildings, Unit 1 Sphere, Units 2 and 3 radwaste buildings and offgas filter buildings, crib houses, and Unit 1 fuel pool and fuel handling buildings. Provide a figure showing the locations of these structures. Provide the excavation depth(s) for the reactor buildings.

Document Needs

None anticipated.

Water Resources - Surface Water (Lloyd Desotell, NRC; Rajiv Prasad and Stephen Ferencz, PNNL)

Audit Needs

SW-1 Provide annual and monthly surface water withdrawals for 2023 (ER table 3.6-a and ER table 3.6-b), if available.

SW-2 Please update figures 3.6-4 and figure 3.6-5 to include 2023 data, if available.

SW-3 Section 3.6.1.2 of the ER states that NPDES Permit No. IL0002224 has been administratively extended pending review of the submitted permit renewal application. Please provide the status of this review and describe any material

differences requested in the submitted permit-renewal application as compared to the administratively extended permit.

SW-4 Section 3.6.4.1 of the ER discusses impaired waters within a 6-mile radius of DNPS. Please discuss which, if any, of the listed impairments DNPS contributes to.

SW-5 Section 3.6.4.1 of the ER discusses surface water sampling conducted as part of the Radiological Environmental Monitoring Program (REMP). This section states that Kankakee River sampling location D-57, located upstream of DNPS, had tritium detections ranging from 254 to 2,540 pCi/L in 2018 through 2022. Please describe the sources of tritium that could result in the measured detections at location D-57.

SW-6 Section 3.6.4.2.1 of the ER states that groundwater recovery well RW-DN-100S extracts tritiated groundwater from the B CST area and discharges this water to Outfall 002. Please describe how this discharge is accounted for the Annual Radioactive Effluent Release Reports. Additionally, please have knowledgeable person available to discuss.

SW-7 Section 3.10.3 of the ER states that there were 16 abnormal liquid release in 2019, but none in the following years through 2023. Please describe the conditions that resulted in these releases and any corrective actions that were taken. Additionally, describe if/how DNPS's determination of an abnormal release has changed over time.

SW-8 The 2019 Annual Radioactive Effluent Release Report (ARERR) states that the cause of storm sewers being contaminated with tritium is due to groundwater in-leakage from historical spills. The 2023 ARERR states that the on-site sewers are sampled and analyzed for tritium content. Please indicate what ARERR table these releases are accounted for and confirm whether the storm sewers themselves are sampled or well CBG is used as proxy as suggested by the ARERR text.

SW-9 Provide a figure illustrating the thermal mixing zone described in ER Section 3.6.1.2.6.

SW-10 Section 4.5.1.4.1 of the ER states that there are no surface water withdrawal permits required for DNPS. Please provide a regulatory citation or correspondence with the State of Illinois to support this statement.

SW-11 Please provide a reference for the reported estimated losses during closed-cycle and open-cycle operation modes due to evaporation and cooling-lake seepage reported in ER Section 3.6.3.1.

SW-12 Confirm that reported average monthly water consumption for closed and open cycle operation modes (2,538.63 and 45,024.45 million gallons per minute (mgm), respectively) over the 2018-2022 period reported in Section 3.6.3.1, Page 3-103 refers to average monthly water withdrawals not consumptive use.

SW-13 Please provide a reference to support the following statement regarding flood elevations from ER Section 3.6.1.1: "The NRC also concluded that the expected 100-year flood would occur at elevation 509.8 feet and the standard project flood would occur between elevations of 512 and 516 feet. The NRC further concluded that neither of these floods will inundate the station, but they would flood the service water pump motors."

SW-14 The caption for ER table 3.6-3b states that during “closed-cycle operation (October 1–June 14), surface water withdrawal volume is listed as “diversion.” During indirect open-cycle operation (June 15–September 30), surface water withdrawal volume is listed as “withdrawal.” For June, surface water withdrawal is estimated as the sum of the “diversion” and half of the “withdrawal” volumes.” What is the distinction between a “withdrawal” versus a “diversion” and why these terms applied to different operating cycles? Provide a knowledgeable person to describe the operation and timing of the various cooling modes.

Document Needs

SW-15 Provide a copy of the current stormwater pollution prevention plan (SWPPP).

SW-16 Provide a copy of the current spill prevention, control, and countermeasure (SPCC) plan.

SW-17 Provide a copy of Permit DS 2000233, operation and maintenance of the Dresden Nuclear Station Cooling Pond Dam.

SW-18 Provide a copy of NPDES Permit No. IL0002224 Fact Sheet.

SW-19 Provide a copy of the Units 2 and 3 Variable Blowdown Plan (referenced in ER Section 3.6.1.2.6).

SW-20 Provide copies of Discharge Monitoring Reports for NPDES permit No. IL0002224 for years 2019 through 2023.

SW-21 Provide copies of the annual surface water withdrawals and diversion forms as discussed in ER Section 4.5.1.4.1 for years 2019 through 2023.

Water Resources - Groundwater Resources (Gerry Stirewalt, NRC; Phil Meyer PNNL)

Audit Needs

GW-1 Provide additional information describing the groundwater low point north of the protected area and its attribution to surface water from the Kankakee River being pumped into the Units 2 and 3 crib house within the unlined Units 2 and 3 intake canal (see ER Section 3.6.2.3). Additional information may include, but not be limited to: a station layout figure showing the locations of the Units 2 and 3 intake canal and crib house, the location at which water is pumped from the Kankakee River, and the location of the potentiometric low point caused by the pumping (reference ER figures 3.6-7 and 3.6-8); the approximate flowrate of pumping; and a discussion of the mechanism whereby pumping water from the Kankakee River produces a depression in the groundwater head. Describe monitoring of surface water levels and groundwater levels at DNPS (e.g., locations, frequency of measurement, reporting requirements).

GW-2 Provide additional information about the source(s) of data for the hydraulic conductivity and porosity values in ER Sections 3.6.2.2. Specifically, describe whether the values provided were based on any site-specific data or measurements. Do the values provided represent the properties of the bulk rock or do they represent properties of the secondary porosity (if applicable)?

GW-3 ER Section 4.5.12.4 states that a permit is not required for groundwater withdrawals and refers to ER Section 3.6.2.3, which does not discuss a withdrawal permit but does state that DNPS submits annual reports to the Illinois State Water Survey (ISWS) documenting groundwater withdrawals. Describe the conditions in Illinois requiring authorization for groundwater withdrawals. Confirm whether the reports to the ISWS are voluntary or required. If required, provide the regulatory source for this requirement.

GW-4 ER Section 3.6.4.2.1 indicates that the State has a criterion of 200 pCi/L tritium for groundwater leaving the station. Provide the regulatory source for this criterion. Describe any reporting associated with this criterion. How does DNPS establish that the criterion is being met?

GW-5 Provide additional information about the onsite disposal of soil and sludge containing trace amounts of radioactive materials, including any containment (e.g., a liner under the pile) and runoff control. Identify how the groundwater monitoring data for this disposal site are reported.

GW-6 Provide tables or plots of available groundwater tritium data for wells affected by the 2014 release, and for wells MW-DN-111S and MW-DN-114S. Provide this data as time series (i.e., tritium data over time at individual locations).

Document Needs

GW-7 Provide for review the following documents implementing the Groundwater Protection Initiative:

a. the site's groundwater protection plan,

b. the 5-year updated hydrogeological investigation reports from May 2011, December 2015, and December 2020,

c. site procedures describing monitoring criteria (e.g., frequency of sampling and limits of detection), reporting requirements, and response to tritium detection in groundwater.

Terrestrial Resources (Caroline Hsu, NRC; Tracy Fuentes, PNNL)

Audit Needs

TER-1 Cooling tower operations can affect terrestrial plants through particulates, increased humidity, and icing. ER Section 2.2.3 states that DNPS uses three mechanical draft helper cooling towers, and ER Section 3.2.3 states that cooling tower vapor clouds can sometimes be seen when cooling towers are running. Please state whether the cooling towers are equipped with drift eliminators.

TER-2 ER Section 3.4 states that DNPS plans to mitigate nighttime cooling tower noise by supporting the planting of 150 evergreen trees between the hot canal and Dresden Road to reduce sound levels over 2-3 years. Please provide the following: a) a map of the proposed planting area; b) a planting plan, including species list and proposed timing, for the area proposed, c) installation dates and any monitoring reports since planting began.

TER-3 Birds and bats can collide with telecommunication towers. Collision risk is higher for taller towers, for guyed towers, and for different lighting regimes. ER Section 2.2.4 states that DNPS has a guyed, structural-steel meteorological (MET) tower. Please

state the height above ground level of the MET tower. If any other telecommunications towers are present on site, provide height and state whether they are freestanding or guyed. For all telecommunication towers on site, state whether they are lit or unlit. If lit, please state lighting colors and whether lights are steady or blinking. If any towers are registered with the Federal Aviation Administration (FAA), please provide the link to the FAA obstruction database for the registered tower.

TER-4 Birds and bats can collide with buildings and other structures. Please provide the height above ground level for all other tall buildings/structures on the DNPS site (≥ 100 feet AGL [above ground level]). If any buildings or structures are registered with the FAA, please provide the link to the FAA obstruction database for the registered building/structure.

TER-5 ER Section 4.6.3 states that no bird deaths or injuries from impingement at the DNPS intake have occurred over the last 5 years. ER Section 4.6.5.4 states that there have been no recorded bird deaths at the DNPS site over a 5-year period. Please provide the following: 1) a summary of bird mortalities or injuries (species, date, cause if known, associated structures or buildings, if any) in chronological order from 2013-2024, 2) any detailed reports for each incident, if any.

TER-6 ER Section 3.7.2.4 states that seven osprey platforms have been installed on the DNPS site and are monitored regularly. ER Section 3.7.2.4 also states that bluebird boxes and purple martin gourd structures have been installed on the DNPS site. Please provide the following: a) a map and details of osprey nest platforms on the DNPS site, including installation dates; b) a map and details of bluebird bird boxes on the DNPS site, including installation dates; c) a map and details of purple martin gourds on the DNPS site, including installation dates, and d) any monitoring reports conducted for use of any of these structures over the last 5 years.

TER-7 ER Section 3.7.2.5 states that bat boxes have been set up on the DNPS site. Please provide a map and details of bat boxes on the DNPS site, including installation dates and any monitoring reports over the last 5 years.

TER-8 ER Section 3.7.2.5 states that a number of bat species are known from the surrounding counties. Please state whether any bat mortalities are known from the site over the last 5 years. If so, provide incident reports, if any.

TER-9 Appendix C contains a letter to the Illinois Department of Natural Resources, requesting input on whether any state-listed species or habitats occur on the site or in the vicinity. Has CEG received a response to this letter? If so, please provide. If CEG has conducted a review of state listed species or habitats through the Illinois DNR [department of natural resources] Ecological Compliance Assessment Tool (EcoCAT), please provide all documents from the EcoCAT review.

Document Needs

TER-10 Avian and Wildlife Management Plan as described in ER Section 4.6.23.4.2.

TER-11 The applicant's Certification Copy and list of Conservation Projects occurring onsite as described in ER Section 3.7.2.3.

TER-12 The applicant's partnership agreement documentation, if applicable as described in ER Section 3.7.2.

TER-13 CEG 5-year Pollinator/Monarch Plan as described in ER Section 3.7.8.1.7.

TER-14 Invasive Plant Management Plan as described in ER Section 3.7.5.

TER-15 DNPS Biodiversity and Habitat Corporate Policy as described in ER Section 3.7.5.

TER-16 Any environmental protection plans and Best Management Practices (BMP)s not already covered above, including those regarding landscaping, wetlands, soil erosion, stormwater protection, Right of Way (ROW) management, and use of herbicides and chemicals.

Aquatic Resources (Mitchell Dehmer/Briana Arlene, NRC; Caitlin Wessel, PNNL)

Audit Needs

AQU-1 ER Section(s) 3.7.5 describe numerous invasive aquatic plants and animals. Which of these species are known to occur, or are likely to occur on the DNPS?

AQU-2 As described in ER Section 4.6.18.4, how often are bathymetric soundings of water areas performed? What results from this test would constitute “periodic maintenance dredging?”

AQU-3 As described in ER Section 4.6.20.4, what anticipated construction and maintenance activities may be taken during the subsequent license renewal (SLR) period

AQU-4 As described in ER Section 4.6.20.4, please expand on the self-reported permit non-compliance for missed stormwater visual observation at Outfalls 002 and 005.

AQU-5 As described in ER Section 4.6.21.4, please describe CEG’s BMPs [best management practice] for preventing erosion from soil disruption related to maintenance and management.

Document Needs

AQU-6 Provide sources for the information in the following tables:

a. Table 3.7-1 Fish Species in the Vicinity of the DNPS Site
b. Table 3.7-2 Benthic Invertebrates in the Vicinity of the DNPS Site
c. Table 3.7-3 Primary Producers and Zooplankton near the DNPS Site
d. Table 3.7-5 Invasive Species in Grundy, Kendall, and Will Counties
e. Table 3.7-6 State and Federally Listed Threatened or Endangered Species in Grundy, Kendall, and Will Counties

AQU-7 Provide a copy for the NRC staff review of the following documents:

a. 2005-2008 Fishery Survey as described in ER Section 3.7.1.7.1
b. 2011 Fishery Survey as described in ER Section 3.7.1.7.1
c. 2013 Fishery Survey as described in ER Section 3.7.1.7.1
d. 2014 Fishery Survey as described in ER Section 3.7.1.7.1
e. 2014 Freshwater Mussel Survey as described in ER Section 3.7.1.7.2
f. 2005-2007 Impingement Mortality Study described in ER Section 3.7.7.1.1
g. 2005-2006 Intake Canal, Discharge Canal and Source Water Ichthyoplankton Studies as described in ER Section 3.7.7.1.1

h. 2017-2018 Impingement Monitoring Study as described in ER Section 3.7.7.1.1

i. 2005-2006 Entrainment Characterization Study as described in ER Section 3.7.7.2.1

j. 2017-2018 Entrainment Sampling Study as described in ER Section 3.7.7.2.2

k. 1991-2014 Long Term Aquatic Monitoring Program as described in ER Section 3.7.7.3.1

l. IPCB [Illinois pollution control board] Order 15-204, dated March 3, 2016, approving alternative thermal limits under Clean Water Act Section 316(a) as described in ER Section 3.7.7.3

m. 2013-2014 Biothermal Assessment as described in ER Section 3.7.7.3.2

n. SWPPP [storm water pollution prevention plan] and SPCC [spill prevention, control, and countermeasure] Plan as described in ER section 4.6.16.4

o. Any correspondence or supporting documentation from the IEPA [Illinois EPA] related to the IEPA making BTA [best technology available] determinations for impingement mortality and entrainment under Clean Water Act Section 316(b) in accordance with the current regulations specified in 40 CFR 122 and 40 CFR P125, which were promulgated in 2014 (79 FR 48300)

Federally Protected Ecological Resources.

(Shannon Healy/Briana Arlene, NRC; Caitlin Wessel, Tracy Fuentes, PNNL)

Audit Needs

FPE-1 Describe the Endangered Species Act (ESA) action area for the proposed Dresden SLR. The implementing regulations for Section 7(a)(2) of the ESA define “action area” as all areas affected directly or indirectly by the Federal action and not merely the immediate area involved in the action (50 CFR 402.02). The action area effectively bounds the analysis of federally listed species and critical habitats because only species and habitats that occur within the action area may be affected by the Federal action.

FPE-2 ER Section 4.6.23.4.2 states suitable roosting and maternity habitat for the Indiana bat and northern long eared bat occurs onsite. Please describe where this habitat occurs and/or depicts the location(s) of this habitat on a map.

FPE-3 The U.S. Fish and Wildlife Service (FWS) has developed a Northern Long-eared Bat Rangewide Determination Key (DKey) to streamline the process of determining whether a project may affect this species. The DKey requires Federal action agencies to answer a series of questions to support this determination. Please answer all questions, which are located within the DKey. A simple yes/no response will suffice for most questions. Supplementary information on this DKey can be obtained at: https://www.fws.gov/library/collections/northern-long-eared-bat-assisted-determination-key-supplementary-information.

FPE-4 The FWS published a proposed rule to list the tricolored bat (Perimyotis subflavus) as endangered under the ESA on September 14, 2022 (87 FR 56381). This species range includes Grundy County. Please provide an analysis of the potential impacts of the proposed license renewal on tricolored bat. This analysis should address (1)

mortality or injury from collisions with plant structures and vehicles; (2) habitat loss, degradation, disturbance, or fragmentation, and associated effects; and (3) behavioral changes resulting from refurbishment or other site activities, among other impacts relevant to this species that CEG may identify.

FPE-5 The FWS published a proposed rule to list the salamander mussel (Simpsonaias ambigua) as endangered under the ESA and to designate critical habitat for this species on August 22, 2023 (88 FR 57223). This species range includes Grundy County. Please discuss whether any aquatic surveys have detected this species (including individuals not identified to the species level that may have been salamander mussels) and provide an analysis of the potential impacts of the proposed license renewal on the salamander mussel. This analysis should address (1) impingement of fish species that early life stages of salamander mussels use as hosts; (2) impacts related to water quality, including chemical and thermal effluents; and (3) dredging, among other impacts relevant to this species that CEG may identify. Please include any relevant results from available aquatic surveys, such as the 2014 freshwater mussel survey. For instance, if mussels in the same genus or family as the salamander mussel have been collected in the, describe these instances and explain the potential for these individuals to be salamander mussels if the individuals were not identified to the species level during survey efforts.

FPE-6 The U.S. Fish and Wildlife Service's Information for Planning and Conservation database (https://ipac.ecosphere.fws.gov/) indicates that the whooping crane (Grus americanus) may occur in the action area. Please provide an analysis of the potential impacts of the proposed license renewal on whooping crane. This analysis should address (1) mortality or injury from collisions with plant structures and vehicles; (2) habitat loss, degradation, disturbance, or fragmentation, and associated effects; and (3) behavioral changes resulting from refurbishment or other site activities, among other impacts relevant to this species that CEG may identify.

FPE-7 As described in ER Section 4.6.23.4.2, where does the DPNS action area for SLR intersect the critical habitat of the Indiana bat and the Hine's emerald dragonfly?

FPE-8 Regarding the eastern fringed prairie orchid, have any surveys been conducted in accordance with guidance from FWS to include a floristic quality assessment or field search? If so, please provide documentation and findings.

FPE-9 As described in ER Section 4.6.23.4.2, mowing occurs in developed portions of the site. Please specify where mowing occurs.

FPE-10 As described in ER Section 9.6, CEG has procedural controls to protect and conserve terrestrial and aquatic ecology. Please specify the BMPs described in this section that "protect wetlands, natural heritage areas, and sensitive ecosystems."

FPE-11 The FWS published a proposed rule to list the Western regal fritillary (Argynnis idalia occidentalis) as threatened under the ESA on August 6, 2024 (89 FR 63888). This species range includes Will and Grundy counties. Please provide an analysis of the potential impacts of the proposed license renewal on the Western regal fritillary. This analysis should address (1) habitat loss, degradation, disturbance, or fragmentation, and associated effects to include mowing; (2) herbicide application and management; and (3) behavioral changes resulting from refurbishment or other site activities, among other impacts relevant to this species that CEG may identify.

Document Needs

FPE-12 Asian Carp Reduction Program as described in ER Section 3.7.1.7.1.

FPE-13 Correspondence to or from the FWS, National Marine Fisheries Service, or IDNR concerning federally protected ecological resources not included in attachment C of the ER.

Historic and Cultural Resources (Jenny Davis, NRC; Lindsey Renaud, PNNL)

Audit Needs

HCR-1 Images in Section 3.8 such as figures 3.8-5 and 3.8-7 depict various stages of construction but do not provide dates of when construction began. When were the facilities constructed? Additionally, does Constellation have photos documenting the site prior to and during construction (i.e., specifically showing depth of horizontal and vertical depth of excavation)? If so, please provide for staff review.

HCR-2 Confirm the acreage of the built facility area within the Extended Area Boundary (EAB). Is the EAB the only location within the 2,459 acre area that has facilities? If not, include discussion on the other facilities, including the purpose of the facility and year of construction.

HCR-3 Confirm how far the Pokagon Band of Potawatomi Indian lands are in proximity to the 50-mile radius specified in Section 3.1.3.

HCR-4 For the ISFSI expansion described Section 3.1.4, provide details on the ground-disturbing activities conducted as part of construction, including where the expansion occurred, acreage, consultation with the Illinois State Historic Preservation Office (IL SHPO), environmental surveys performed, and results of those surveys. Discuss how Constellation's procedures were implemented for this construction activity with respect to considering impacts to historic and cultural resources. Confirm if ground-disturbing activities were monitored by archaeologists and/or tribal monitors.

HCR-5 Section 3.8.3 briefly describes the presence of two potential National Register-eligible sites within the DNPS property. Provide additional information on the sites, including their general location within the area of potential affect (APE), why they were determined potentially eligible, and an evaluation of how the project would not adversely impact the sites using the criteria set forth in 36 CFR 800.4(c).

HCR-6 Confirm how many previous archaeological surveys were conducted within the 2,459-acre APE. Section 3.8.5 states one previous survey was completed in 2019 within the DNPS site but five surveys are listed in table 3.8-1 and discussed in Section 4.7.

Additionally, Section 3.8.5 also indicates that the last archaeological survey within the APE was conducted around 2019 but does not describe any recent in-field surveys to identify previously unknown historic properties. Describe what steps were taken to identify historic properties, including Traditional Cultural Properties, within the archaeological APE in areas not covered by previous surveys.

HCR-7 Section 3.8.3 mentions that the structures within the DNPS property have not been surveyed, although many of them are over 50 years old. Provide an explanation as to why the buildings were not evaluated for potential listing on the National Register of Historic Places as required under 36 CFR 800.4.

HCR-8 Section 3.8.6 describes environmental personnel who are contacted to arrange for a survey prior to conducting any ground-disturbing activities. Elaborate on who the environmental personnel are and their role within your organization.

HCR-9 Section 3.5.3.2 describes DNPS' stormwater pollution prevention plan. While no areas of erosion have been identified, the ER states that erosion may develop in the future due to runoff patterns or construction activities. Describe what proposed construction is planned and how erosion would be mitigated. What measures are in place to protect cultural resources that may be along the riverbanks?

HCR-10 How is cultural resources information safeguarded? For the known archaeological sites within the APE, who is responsible for the safeguarding and management of the information? Describe any cultural resources databases, best management practices, and other applicable mechanisms for the dissemination of known resources within project areas, especially around the two potentially eligible archaeological sites?

HCR-11 Confirm if Constellation has an inadvertent discovery protocol (IDP) for the inadvertent discovery of cultural resources and human remains. Describe what workflow process (i.e., stop work and notification protocols) would be enacted if such an occurrence were to happen, including coordination with the local coroner's office and the IL SHPO. Provide the IDP(s) for NRC staff's review.

HCR-12 Section 4.4.4 of the Environmental Report states, "Maintenance activities and any potential construction activities undertaken during the SLR period that would involve ground disturbance would be required to follow the DNPS excavation permit procedure and could also trigger an environmental review to determine any impacts." Provide a description of what maintenance and construction activities could occur, clarify what an environmental review would include, and whether these activities will avoid historic properties. Provide a copy of the DNPS excavation permit procedure for staff's review.

In the same Section 4.4.4, the ER states, "Routine infrastructure, renovation, and maintenance projects are expected during DNPS's continued operation." Provide a description of these projects and how they may impact historic and cultural resources.

HCR-13 Section 3.4 states that CEG plans to add 150 evergreen trees over the course of 2-3 years, with work beginning Spring 2024. Provide additional information on the activity, including if Constellation has started planting trees, the location(s) of current and planned plantings, what cultural resources surveys were conducted prior to planting, and the results of the surveys, if applicable. Discuss how Constellation's procedures were implemented for this construction activity with respect to considering impacts to historic and cultural resources. Confirm if ground-disturbing activities were monitored by archaeologists and/or Tribal monitors.

Further, describe how close the plantings are to the two Historic Districts within one mile of the DNPS site – the Illinois and Michigan Canal District and the Dresden Island Lock and Dam. Describe what considerations were undertaken to not visually and physically impact the districts.

HCR-14 Attachment D, Historic and Cultural Resources Consultation Letters, provided copies of letters Constellation sent to Tribes seeking input on the current license renewal.

Provide all correspondence and other communication documents Constellation has received from Tribes since April 17, 2023, if any.

Document Needs Provide the following documents and procedures:

HCR-15 All surveys listed in the ER, including the 1973 reconnaissance survey by Robert L. Hall of site 11GR2 and the report for survey #23098

HCR-16 Excavation, trenching, and shoring procedure

HCR-17 Environmental evaluation procedure

HCR-18 Inadvertent Discovery Plan

Socioeconomics (Caroline Hsu and Jeff Rikhoff, NRC; Adrienne Rackley, PNNL)

Audit Needs

SOC-1 Please provide any update of tax revenue payments for 2022 and 2023.

SOC-2 As stated in the ER, DPNS provides annual funding to IEMAOHS [Illinois Emergency Management Agency and Office of Homeland Security (IEMAOHS).]. This was $3,800,000 in 2022. Please provide DPNS funding to IEMAOHS for 2018-2021 and 2023 if available.

Document Needs

None anticipated.

Human Health (Don Palmrose, NRC)

Audit Needs

HH-1 Please provide any updates concerning waterborne diseases in the vicinity of the plant since the submission of the subsequent license renewal environmental report, including any updates from Centers for Disease Control and Prevention National Outbreak Reporting System Dashboard and/or subsequent local information as discussed in ER Sections 3.10.1 and 4.9.4. This update should also include any notifications in plant records from local, state, or federal agencies relating to waterborne diseases or reportable conditions of E.coli.

HH-2 Have there been any Occupational Safety and Health Administration recordable injuries since those reported through 2022 as noted in ER Sections 4.9.3.4 and 4.9.6.4?

HH-3 In the state's reply regarding thermophilic microorganisms, Illinois Department of Public Health recommended reaching out to IEPA's Division of Water Pollution Control Field Operations related to the request for information concerning the public health. Is there correspondence with the Division of Water Pollution Control Field Operations related to thermophilic microorganisms? Also note that ER Section 4.9.4 references attachment F for correspondence, but it's included in attachment E.

HH-4 Regarding NESC [National Electrical Safety Code (NESC)] criteria applicability for the overhead transmission lines, included in the review is what NESC and NFPA [National Fire Protection Association (NFPA)] standards apply onsite for electrical safety, how is the access road span considered part of the electrical supply station,

and why isn't the exception noted in Rule 162A applicable with respect to being subject to NESC Part 2?

HH-5 In ER Section 3.10.2, it is noted that work by staff near or under energized overhead lines follows the guidance specified in the fleet electrical safety procedure for overhead power lines and hazardous induced voltages. It states that the fleet electrical safety procedures were developed to comply with the NFPA electrical safety in the workplace standard and applicable NESC standards. Please clarify what NESC standards were applicable.

Document Needs

Please provide in the electronic reading room copies of the fleet electrical safety procedures, electrical safety program procedures addressing proper clearances, and procedures addressing grounding of vehicles, equipment, and structures, and the workplace hazards identification process as discussed in ER Section 3.10.2., Electric Shock Hazards.

Environmental Justice (Caroline Hsu, NRC; Adrienne Rackley, PNNL)

Audit Needs

EJ-1 What community engagement has the applicant conducted to learn about the potential impacts and concerns that the local communities might have about the continued operation of DPNS?

EJ-2 Section 3.11.3.1 states that "DNPS staff were interviewed to identify whether there are any subpopulations …that engage in a subsistence-like lifestyle," and that "no known subsistence-based activity was identified in the DNPS vicinity." Were any other efforts made, interviews or studies conducted to identify and consult with representatives of environmental justice communities and Indian Tribes to locate subsistence activities or resource dependencies?

Document Needs

None anticipated.

Waste Management (Leah Parks, NRC)

Audit Needs

WM-1 As part of the effluent control systems, plan to discuss the provisions made to sample and analyze fluids before discharge as discussed in 2.2.6.1. In addition, plan to discuss how the plant processes radioactive effluents to maintain radiation doses to the public to levels that are as low as reasonably achievable. Are there any proposed changes or upgrades to the program being considered during the license renewal term?

WM-2 Section 2.2.6.5 notes that Dresden also provides onsite storage of mixed waste. Specifically, DNPS currently has 30 gallons of caustic soda that has become mixed waste. Are any other wastes besides mixed waste stored in this location? What are the plans and procedures associated with long-term storage of mixed waste?

WM-3 Section 2.2.6.3 discusses the Solid Waste Management Systems. What are the plans to store or ship low-level waste (e.g., are there minimum quantity shipment

plans or procedures for decision making)? In addition, plan to discuss how the plant plans to handle low-level radioactive waste (Class A, B, and C, mixed waste, and spent nuclear fuel) during the license renewal term (onsite storage, potential expansion of storage facilities, and disposal options). Are there any proposed changes or upgrades to the program being considered during the license renewal term? Does the site currently have any greater than Class C waste stored?

WM-4 DNPS is subject to the reporting provisions of 40 CFR Part 110 as it relates to the discharge of oil in such quantities as may be harmful pursuant to Section 311(b)(4) of the Federal Water Pollution Control Act. In section 9.5.3.6 of the ER, the applicant discusses reportable spills and states that for the period of 2018-2023, there were no reportable releases that have triggered this notification requirement. If there have been any reportable releases which would trigger this notification requirement since the ER was written, please provide a description of the releases.

WM-5 Please be prepared to discuss your plan to handle unplanned releases of radioactive materials. The ER, Section 3.10.3 states that while there were no abnormal radioactive releases in 2018, 2020, 2021, and 2022, there were 16 abnormal liquid releases and 4 abnormal gaseous releases in 2019. In reviewing the reports spanning from 2018 to 2023, this difference appears to be a result of the differing format of the reports and the way the site was characterizing certain releases rather than an indication that anything abnormal occurred in 2019 in comparison to the other years. Please be prepared to discuss the format of the 2019 report versus the 2018 or 2020 report in terms of how abnormal releases are defined and how the format of the report may have been altered due to Revision 15 and Revision 16 of the ODCM which were published in 2018 and 2019 respectively. Please also discuss how the site's definition of abnormal release compares to the definition in Reg Guide 1.21, Rev. 3. The corrected 2019 effluent report describes how beginning in September 2019, groundwater from the west tritium remediation well was monitored via the 2/3 discharge tunnel. The reports estimate that 6.01E-03 Ci of tritium was released via this source in 2019, 9.499E-03 Ci of tritium in 2020, and 3.49E-03 Ci of tritium in 2021. For the year 2022, the pump was broken for all but the month of December and the 2023 report does not appear to indicate the estimated release via this pathway. Please be prepared to discuss the amount of tritium released via the west tritium remediation well in 2019-2023 and how the tritium release is accounted for in the effluent release reports. If there have been any reportable unplanned releases of radioactive materials (unplanned/inadvertent radioactive liquid or gaseous releases) which would trigger a notification requirement since the ER was written, please provide a description of the releases. (See also SW-6 and SW-7).

WM-6 If there have been any reportable inadvertent releases or spills of nonradioactive contaminants which would trigger a notification requirement since the ER was written, please provide a description of spills/releases. Please be prepared to discuss your plan to handle inadvertent nonradioactive releases.

WM-7 The ER Section 3.6.2.4 and Section 3.6.4.2 describe how in 2015, the NRC approved of the accumulated soil volume and disposal of future radionuclide impacted soil and sludge up to 20,000 cubic meters. Please describe the status of the disposal site in terms of the total volume of waste that has been disposed of at the site, and the best management practices that are in place to minimize surface drainage and runoff and associated erosion of the site. Please indicate whether any sewage treatment drying bed waste has been place in the disposal site. If so, please

indicate which permits from the State of Illinois were obtained prior to disposal of the sewage treatment drying bed waste. (See also GW-5).

Document Needs

WM-8 Provide procedures related to the radioactive and nonradioactive Waste Management Program, Waste Minimization Program, and Stormwater Pollution Prevention Plan.

WM-9 Drawings and/or photos that are highlighted/marked showing the flow paths for releases for both radiological and non-radiological waste paths. Please have subject matter experts available to discuss the flow paths.

WM-10 Provide the log of approved waste vendors used to manage and dispose of hazardous and non-hazardous waste as discussed in Section 2.2.7 of the ER.

WM-11 Provide procedures related to the disposal site for slightly contaminated soil and sewage treatment drying bed waste.

Spent Nuclear Fuel (Leah Parks, NRC)

Audit Needs

SNF-1 The ER Section 2.2.6.4 states that "The station has two separate ISFSIs. The East ISFSI is comprised of two sections and has space for 10 additional casks. The West ISFSI is one pad and has space for 13 additional casks. As of November 2023, DNPS has completed construction on an expansion of the West ISFSI that will provide adequate storage to operate through the subsequent period of extended operation (SPEO) for Units 2 and 3." Please discuss the storage plans for the spent fuel produced during the license renewal term, including any plans for expansion or additional storage locations necessary for capacity for license renewal term. Please clarify whether the expansion of the West ISFSI will provide sufficient capacity to store all the spent fuel that is expected to be generated for the lifetime of the plant through the period of extended operation once all the fuel has been removed from the spent fuel pools. If the dry storage capacity should need to be expanded, please indicate whether there is already disturbed land on the site and potentially adjacent to the current ISFSI that could be used for the expansion.

Document Needs

None.

Uranium Fuel Cycle (Rao Tammara, NRC)

Audit Needs
None anticipated.

Termination of Operations and Decommissioning (Rao Tammara, NRC)

Audit Needs
None anticipated.

Greenhouse Gas and Climate Change
(Nancy Martinez, NRC; Julia Flaherty, Lexie Goldberger, Ravij Prasad, and Stephen Ferencz, PNNL).

Audit Needs

GHG-CC-1 Section 3.3.4 states "No DNPS data exist for indirect mobile emission sources such as the commuting workforce, visitors, and delivery vehicles." Table 3.3-11 of the ER provides greenhouse gases (GHG) emissions for workforce commuting and describes how the emissions were calculated. The calculations are based on 717 employees. Is the October 2022 employee count (717) a conservative value for all years (2018-2019) presented in the table 3.3-11.

GHG-CC-2 Table 3.3-11 includes GHG emissions for 2018 through 2022.

a. For direct emissions, provide the relative percentage each source (stationary combustion sources, sulfur hexafluoride, process CO2 and ozone depleting compounds refrigerants) contributed to the annual total.
b. Provide additional information regarding how direct emissions were estimated. As part of the response provide the emission factors, global warming potentials, fuel usage, fugitive emissions, and/or any assumptions used to quantify emissions.
c. Provide additional information about where SF6 is used (identify the sources/equipment) and if and how fugitive emissions of SF6 are mitigated. If CEG has site procedures that address the handling of sulfur hexafluoride to prevent or reduce fugitive emissions, please provide a copy
d. Table 3.3-11 identifies that process CO2 was included in the GHG emissions inventory. Identify the sources/equipment that use CO2?
e. Please provide emissions for 2023.

GHG-CC-3 Provide a discussion of the trends in temperature and precipitation or other climate change indicators projected for the site and vicinity over the duration of the renewal period.

GHG-CC-4 Figures 3.6-4 and 3.6-5 of the ER present average monthly discharge temperatures and average monthly intake temperatures for 2018-2022. Has a warming trend been observed at these locations based on the long-term available period of record? Please provide data to support the conclusions reached (e.g., graphs, time series analysis, etc.).

Document Needs

None anticipated.

Cumulative Impacts (Bob Hoffman, NRC; Dave Goodman and Dani Young, PNNL)
Audit Needs

CI-1 Please provide name, description, location, and status of any additional past, present, or reasonably foreseeable projects or actions that have been identified since the ER was prepared.

Document Needs

None anticipated.

Postulated Accidents/SAMA (Jerry Dozier and Charles Moulton NRC; Bill Ivans and Steve Short, PNNL)

SAMA-1 Section 4.15.2.1 of the SLR ER provides risk estimates for internal events, including internal flooding as well as fire, seismic, external flooding, and high wind/tornado events. Clarify the extent to which other external events were considered and their basis for exclusion, if applicable, as new and significant information.

SAMA-2 Section 4.15.2.1 of the SLR ER provides a Cumulative Distribution Function (CDF) estimate of 2.00E-05 per year for external flooding events for each Unit 2 and 3. Section 2.2.5.3 of External Hazards Assessment (DR-LAR-008, Revision 0) suggests that this estimate is based on the frequency of floods greater than 517.5 feet (i.e., 2.00E-05 per year) with an assumed conditional core damage probability of 1.0. Confirm that this is the basis of the external flooding CDF estimate within the SLR ER.

SAMA-3 Section 4.15.2.1 of the SLR ER provides a CDF estimate for high wind/tornado events that is estimated to be no more than 2.00E-05 per year per unit. However, Section 4.1.1 of the "Assessment of Significance for New Information relevant to Dresden Nuclear Power Station [DNPS] SAMAs" (i.e., the SAMA basis document) clarifies that the DNPS individual plant examination for external events concluded high wind/tornado events to be of acceptably low risk, meeting the Standard Review Plant criteria, and further indicates that such events are not considered in the applicant's Stage 1 assessment. As the SLR ER now suggests that high wind/tornado events are a significant contributor to total plant risk, provide justification that their inclusion in the applicant's Stage 1 assessment would not alter the assessment's conclusion, namely that unimplemented Final Plant-Specific and Applicable Industry SAMAs, as defined by Nuclear Energy Institute (NEI) 17-04, would have averted cost-risk values that are less than 50 percent of the maximum benefit (MB).

SAMA-4 Section 3.2.2 of NEI 17-04 states that "an alternate quantification process is required for any SAMAs that reduce the consequences of accidents without reducing the CDF or release category frequencies." Confirm that an alternate quantification process, as discussed in Section 3.2.2 of NEI 17-04, was not applied within the applicant's Stage 1 assessment because the impact of SAMA implementation on the CDF and/or the Level 2 release category frequencies was adequate for demonstrating that unimplemented Final Plant-Specific and Applicable Industry SAMAs, as defined by NEI 17-04, would have averted cost-risk values that are less than 50 percent of the MB.

SAMA-5 Table 4.15-5 of the SLR ER indicates that as part of the applicant's Stage 1 assessment, the overall risk reduction for the plant is quantified using a subset of Level 2 release categories, namely, High-Early (H/E), High-Intermediate (H/I), and Medium-Early (M/E), and a risk reduction criterion of 45 percent (in lieu of the 50 percent referenced within NEI 17-04). Provide a technical basis for use of

this subset as well as the 45 percent criterion.

SAMA-6 Section 4.15.2.2 of the SLR ER states that “[u]nless otherwise stated, the risk reduction results include the conservative assumption that all seismic H/E, H/I, and M/E risk is reduced to zero.” However, Section 4.1.1.2 of the SAMA basis document suggests that this assumption is also applied to the CDF metric, stating that “each SAMA reduces all of seismic risk.” Yet, the footnote to table 4.15-7 appears to only flag the H/E column. Clarify the application of both the seismic probabilistic risk assessment (PRA) model results and the aforementioned assumption for each metric considered.

SAMA-7 The dispositions for SLR SAMAs 48 and 54 within table 4.15-5 state that the seismic PRA model failed to properly quantify and that the same reduction as the internal events model was assumed. Clarify why the seismic PRA model could not be quantified and provide justification for the given assumption sufficient to conclude that the affected SAMAs would not have averted cost-risk values that are more than 50 percent of the MB.

SAMA-8 Section 4.3 of the SAMA basis document states that neither the fire PRA nor the seismic PRA has a full Level 2 analysis. As a consequence, the applicant’s Stage 1 assessment, as documented in Section 3.0 of the SAMA basis document, assumes that with the exception of the H/E release category frequency, which is calculated directly from the fire and seismic PRA models, the proportion of each accident class frequency that is distributed to the Level 2 release category frequencies for the fire and seismic models is approximately the same as that for the internal events model. However, the basis for this assumption is not clear.

Upon comparing the information from tables 4-8 and 4-9 of the DNPS Fire PRA Summary and Quantification Notebook (DR-PSA-021.11, Revision 3) with table 3.4-3 of the DNPS PRA Summary Document (DR-PSA-013, Revision 12), it is observed that the proportion of accident class frequency distributed to the H/E release category Large Early Release Frequency (LERF) appears to differ between the fire and internal events risk models. For instance, table 3.4-3 of the DNPS PRA Summary Document indicates that 4.4 percent and 12.9 percent of core damage sequences within accident classes 1A and 1BE, respectively, would result in a H/E release. Using the CDF and LERF estimates within tables 4-8 and 4-9 of the DNPS Fire PRA Summary and Quantification Notebook, 12.3 percent (LERF of 2.06E-6 per year / CDF of 1.67E-5 per year) and 46.9 percent (LERF of 9.75E-7 per year / CDF of 2.08E-6 per year) of core damage sequences within accident classes 1A and 1BE, respectively, result in a H/E release for the Unit 2 fire PRA.

Provide justification for the given assumption sufficient to conclude that unimplemented Final Plant-Specific and Applicable Industry SAMAs, as defined by NEI 17-04, would have averted cost-risk values that are less than 50 percent of the MB.

SAMA-9 Section 3.0 of the SAMA basis document states that “[w]hile [DNPS] Units 2 and 3 are not exactly the same, the Unit 2 model quantifications are representative of the Unit 3 model (i.e., separate quantifications for each Unit are not required for each SAMA)”. Confirm that use of the Unit 3 model would not impact the

conclusion of the applicant's Stage 1 assessment, namely that unimplemented Final Plant-Specific and Applicable Industry SAMAs, as defined by NEI 17-04, have averted cost-risk values that are less than 50 percent of the MB.

Document Needs

None

Dresden Nuclear Power Station Unit 2 and 3

Environmental Audit Schedule

Virtual Audit

Tuesday, September 30, 2024

START	END	ACTIVITY
9:00 am ET	12:00 pm ET	Virtual meetings between NRC, Constellation, and contractor SMEs

Tuesday, October 22, 2024

START	END	ACTIVITY
9:00 am ET	9:30 am ET	Entrance meeting between U.S. Nuclear Regulatory Commission (NRC), Constellation and contractors
9:30 am ET	3:00 pm ET	Virtual tours/virtual meetings between NRC, Constellation, and contractor subject matter experts (SMEs)

Wednesday, October 23, 2024

START	END	ACTIVITY
9:00 am ET	4:30 pm ET	Virtual meetings between NRC, Constellation, and contractor SMEs

Thursday, October 24, 2024

START	END	ACTIVITY
9:00 am ET	3:00 pm ET	Virtual meetings between NRC, Constellation, and contractor SMEs