NEPA REVIEW SCREENING FORM (NRSF) 3 Categorically Excluded Actions

I. Project Title:

Site Characterization Borehole/Well Drilling at the Washington Nuclear Plant (WNP-1) Site in Support of Energy Northwest's Advanced Reactor Demonstration Program Environmental Report and Construction Permit Application to the United States Nuclear Regulatory Commission

II. Describe the proposed action, including location, time period over which proposed action will occur, project dimension (e.g., acres displaced/disturbed, excavation length/depth), and area/location/number of buildings. Attach narratives, maps and drawings of proposed action. Describe existing environmental conditions and potential for environmental impacts from the proposed action. If the proposed action is not a project, describe the action or plan.

Energy Northwest (EN) announced their intention to partner with X-Energy, LLC in the development and commercial deployment of new small modular reactor (SMR) technology in support of the Advanced Reactor Demonstration Program (ARDP), which was awarded to EN on October 13, 2020, by the U.S. Department of Energy (DOE), Nuclear Energy (DOE-NE). This program was driven by Congressional and DOE objectives of maintaining the nation's role as a global leader in nuclear energy innovation and technological development, as well as the deployment of vital new clean energy generating resources.

On February 24, 2022, EN sent a letter (XO1-22-001) to the DOE Richland Operations Office (DOE-RL) requesting authorization to proceed with site characterization borehole/well drilling and monitoring activities at the Washington Nuclear Project (WNP-1) site (see Figure 1). This data will support their effort to prepare an environmental report, determine site suitability, enable sufficient safety analyses, and support EN's construction permit application to the U.S. Nuclear Regulatory Commission. This data is needed to support detailed analyses and evaluations of geological characteristics, engineering properties of soils and rocks, groundwater conditions, human induced conditions, cultural and ecological resources, and other environmental considerations to enable sufficient safety analyses.

Characterization and monitoring of WNP-1 site hydrology will require shallow (S) and deep (D) groundwater well pairs. The well pairs are identified as GW-S-1/GW-D-1, GW-S-2/GW-D-2, GW-S-3/GW-D-3, GW-S-4/GW-D-4, and GW-S-5/GW-D-5 (see Figure 2). Based on the regional groundwater flow direction from west to east towards the Columbia River, GW-4 and GW-5 well pairs will provide monitoring to evaluate groundwater quality flowing beneath the WNP-1 site that may be affected by upgradient facilities (e.g., 618-11 Burial Ground). GW-1, GW-2, and GW-3 well pairs will provide downgradient monitoring to evaluate the effects of proposed SMR construction and operation activities on groundwater quality (see Figure 3). Estimated boring depths for groundwater well pairs will range between 40-feet and 200-feet below ground surface (bgs). Actual depths will be determined based on field conditions and locations of target aquifers and/or water bearing zones. These well pair installations will provide groundwater characterization and environmental monitoring as well as establish the baseline chemical and physical conditions of the site hydrostratigraphy to inform a conceptual site model.

The site characterization borehole/well drilling activities will also include two geotechnical exploratory borings at depths of up to 200-feet bgs near well pairs GW-2 and GW-5. The geotechnical exploratory borings will be drilled ahead of, and adjacent to, the groundwater monitoring well pairs to inform well design and installation. The locations of well pairs GW-1, GW-3, GW-4, and GW-5 are accessible from existing paved or gravel roads. The location of well pair GW-2 may require off-road access using a tracked drilling rig due to the need to traverse sandy soils.

The characterization of site geology and hydrology will require the drilling of up to 280 investigation boreholes within the Geologic Borehole Investigation Area. The maximum depth of borings is estimated at 600-feet bgs with many of the borings having a depth of 100-feet to 200-feet bgs. Borehole depth variations may be plus or minus 60-feet. The diameter of these borings will range from 4-inches to 10-inches. The location of investigation boreholes will be limited to the Geologic Borehole Investigation Area, which is approximately 90 acres in size, plus an additional 30-feet wide perimeter to accommodate investigation findings and necessary design changes.

The total WNP-1 site boundary is approximately 364 acres. Proposed site characterization borehole/ well drilling and monitoring activities will be conducted to the east of North Power Plant Loop and do not involve areas to the west of the road, which are within the WNP-1 site boundary.

Sonic techniques are proposed for the drilling of site characterization boreholes/wells. A starter hole may be excavated to a depth of approximately 6-feet using a vacuum truck to clear the location for possible underground utilities and other structures or infrastructures.

Other drilling methods may be used should the need arise. Such methods would include, but may not be limited to, air/mud rotary, cable tool, auger, and directional drilling methods. Use of other drilling methods may become necessary in response to site hydrogeologic conditions to achieve desired drilling objectives (e.g., depth of penetration, rate of penetration, intact sample recovery, continual sampling capability, contamination control, etc.).

Various support activities will be conducted to support site characterization borehole/well drilling activities and may include, but not be limited to, materials storage, equipment staging, personnel accommodations (i.e., portable restrooms, lunch trailers, etc.), and vehicle parking. All support activities will be temporary and occur within the area of potential effects discussed herein.

ECOLOGICAL RESOURCES REVIEW (ECR-2022-614). DOE-RL Ecological Compliance performed a survey of the project area on April 5, 2022. The Hanford Site Biological Resources Management Plan (BRMP, DOE/RL-96-32, Rev. 2), which is the primary implementation document for managing and protecting biological resources on the Hanford Site, ranks wildlife species and habitats based on the level of concern for each resource (levels 0-5). BRMP level 0 and 1 habitats provide little or no ecological value and require no protection or conservation. When possible for BRMP level 2, 3, and 4 habitats; impacts will be avoided to the extent feasible or diverted to a lower quality habitat. However, if impacts are unavoidable, then the impacts would be minimized. Compensatory mitigation for these levels is required if the total project impact after avoidance, minimization, and onsite rectification is greater than 1.2 acres. Habitat replacement ratios for BRMP level 2, 3, and 4 habitats are 1:1, 3:1, and 5:1, respectively. There are no BRMP level 5 or 4 habitats in the project area (see Figure 4).

Approximately 0.30 acres of BRMP level 3 habitat is present within the project area at the GW-3 groundwater well pair location. BRMP level 2 habitats are prevalent within the WNP-1 site boundary and cover 53.37 acres of the project area including a large portion of the Geologic Borehole Investigation Area and the areas surrounding the GW-2, GW-3, and GW-5 groundwater well pair locations. Remaining portions of the project area are BRMP level 1 and 0 habitats, which are managed to best support the ongoing waste management, environmental restoration, and technology development missions of the Hanford Site. There are no compensatory mitigation requirements associated with BRMP level 1 and 0 habitats beyond regulatory compliance.

Noxious Weeds. A patch of the Washington State Class B noxious weed dalmatian toadflax was observed at the GW-1 groundwater well pair location. Dalmatian toadflax causes negative impacts to natural areas where it out-competes native species. EN or its subcontractors will consider eradicating dalmatian toadflax from the project area prior to the initiation of project activities using mechanical or chemical control to prevent the spread of weed seeds. Additionally, project vehicles and equipment used off-road in areas containing noxious weeds will be washed in the field at designated cleaning stations with cold, low-pressure water or compressed air prior to leaving the area to prevent the spread of weed seeds. Soap, detergents, or cleaners will not be used.

Migratory Birds. Birds can nest within the project area on the ground, on buildings, or on equipment and the nesting season is typically from mid-March to mid-July. EN will instruct project personnel to watch for nesting birds. If any nesting birds are encountered or suspected, or bird defensive behaviors are observed within the project area, project personnel would contact DOE-RL Ecological Compliance to evaluate the situation. DOE-RL Ecological Compliance will perform a nesting bird survey prior to the project conducting ground disturbing activities during the nesting season. The nesting bird survey will be scheduled at least one week prior to initiation of ground disturbing activities.

Mitigation Measures. Compliance with ecological resources protection requirements will be coordinated between DOE-RL and EN. DOE-RL Ecological Compliance will conduct a post-construction survey to determine actual impacts to ecological resources and recommend appropriate mitigation measures.

No adverse impacts to ecological resources are anticipated. Any changes in the scope of activities that could result in disturbances outside of the project area may require additional ecological

resources review as determined by DOE-RL Ecological Compliance. Due to the seasonal and migratory nature of plants and animals, the ecological resources review is valid for one year from the date of the clearance letter (ECR-2022-614 was approved on April 26, 2022) and will be renewed, when needed.

CULTURAL RESOURCES REVIEW (HCRC#2022-600-007). DOE-RL Cultural and Historic Resources Program (CHRP) conducted a Cultural Resources Review (CRR) of the proposed project. DOE-RL CHRP sent an Area of Potential Effects (APE) notification to the Washington State Historic Preservation Officer (SHPO) and regional Tribes on March 17, 2022, and conducted a site survey on April 5, 2022. No new cultural resources were located during the site survey. DOE-RL CHRP transmitted the CRR with a finding of "No Adverse Effect" to the SHPO and regional Tribes for a 30-day comment period on April 13, 2022. The SHPO concurred with the findings of the CRR on April 14, 2022. DOE-RL CHRP provided a notice of compliance with 54 U.S.C. §306108 (formerly known as Section 106) of the National Historic Preservation Act (NHPA) for this project on May 19, 2022.

One historic property is present within the APE; however, the project will not affect this property and mitigation for adverse effects has been completed in accordance with DOE/RL-97-56, "Hanford Site Manhattan Project and Cold War Era Historic District Treatment Plan." The majority of the APE has been extensively disturbed as a result of construction activities prior to the abandonment of the WNP-1 construction project. A small area in the southwest corner of the APE remains largely undisturbed. This undisturbed area will be avoided and no ARDP project related activities would be performed in this area (see Figure 5).

Although no impacts to cultural resources are anticipated, EN will direct all workers to watch for cultural materials (e.g., bones, stone tools, mussel shell, arrowheads, burned rocks/charcoal, cans, and bottles, etc.) during work activities. If any cultural materials are encountered, work in the vicinity of the discovery would stop until a DOE-RL CHRP Cultural Resources Specialist has been notified, the significance of the find assessed, appropriate consulting parties notified, and if necessary, arrangements made for mitigation of the find.

HEALTH AND SAFETY PLAN. EN will be responsible for preparing a Health and Safety Plan (HASP) to address anticipated site characterization borehole/well drilling, monitoring, and support activities. The HASP will be prepared in accordance with Washington Division of Occupational Safety and Health regulations or other applicable regulations prior to initiating site characterization borehole/well drilling, monitoring, and support activities to ensure worker protection. EN or its drilling subcontractor will perform tailgate safety meetings at the start of each workday, when a new person joins the work group, and when activities change from those planned. The HASP will also address protocols and procedures to ensure worker health and safety in the event contaminated soil or groundwater is detected during site characterization borehole/well drilling and development activities to mitigate potential effects.

618-11 BURIAL GROUND. The 618-11 burial ground lies directly west of the CGS (see Figures 6 and 7). The site consists of three "V" shaped trenches, 2 large diameter caissons, and 50 vertical pipe units, which are open to the soil at the bottom. The burial ground received a variety of waste from 300 Area operations. Based on historical information, contaminates of concern include uranium, cesium, strontium, curium, cobalt-60, technetium-99, zirconium/plutonium metal, plutonium nitrate, thorium, beryllium, aluminum-lithium, carbon tetrachloride, tritium, and sodium-potassium eutectic.

The burial ground operated from 1962 to 1967, is currently inactive, and covers 8.6 acres. Shortly after the site was closed, it was covered with 4-feet of soil. In 1983, the surface of the site was stabilized with an additional 2-feet of soil and planted with Wheatgrass. The site perimeter is fenced and marked with concrete posts.

Previous groundwater monitoring was conducted in May 2000 (PNNL-13228) and August 2005 (PNNL-15293) and can be referenced for historical groundwater contaminant plume data. On January 12, 2022, DOE-RL provided environmental characterization data in response to an EN request in support of their license application to the NRC (22-SSD-000262). The data included extensive groundwater characterization data accessed through the Hanford Environmental Dashboard Application as well as geologic data derived from multiple models currently in use at Hanford.

WELL DRILLING AND INSTALLATION. Prior to the start of site characterization borehole/well drilling activities, EN or its drilling subcontractor will obtain all required permits and licenses from

the State of Washington Department of Ecology in accordance with applicable regulations (e.g., WAC 173-160, "Minimum Standards for Construction and Maintenance of Wells" and WAC 173-162, "Regulation and Licensing of Well Contractors and Operators"). In particular, site characterization borehole/well drilling and installation will be performed in accordance with WAC 173-160-400, "Minimum Standards for Resource Protection Wells and Geotechnical Soil Borings." Dry boreholes and other abandoned boreholes will be closed in accordance with WAC 173-160-381, "Standards for Decommissioning a Well." An on-site utility clearance will be conducted using an appropriate geophysical method (e.g., ground-penetrating radar) within a 25-foot radius of the prospective site characterization borehole/well drilling locations.

INVESTIGATION-DERIVED SOLID AND LIQUID WASTE. EN or its drilling subcontractor will manage and dispose of investigation-derived solid and liquid waste in accordance with applicable Federal, State, local, and other requirements. Given the potential for encountering contaminated soil or groundwater during site characterization borehole/well drilling activities; well drilling, well development, soil boring, and well logging activities will be considered safety-related. Additionally, for environmental characterization purposes, soil samples will be screened in the field for the presence of volatile organic compounds (VOCs) using a photoionization detector and for alpha, beta, and gamma radiation using a Geiger-Mueller (GM) probe or other appropriate detectors and methods.

Investigation-derived waste (IDW), including but not limited to, soil, sediment, and rock cuttings; and disposable investigation supplies (i.e., plastic sheeting and personal protective equipment, etc.) will be stored in either 55-gallon steel drums, wooden boxes with lids, or other regulatory compliant methods and placed on wooden pallets for future removal and disposition. The IDW containers will be labeled with the contents and contact information. Samples will be collected for waste profiling purposes and transported to a subcontracted laboratory for analysis, as required. Analysis would include, but may not be limited to, Resource Conservation and Recovery Act (RCRA) eight metals (arsenic, barium, cadmium, chromium, lead, mercury, silver, and selenium), leachability testing, VOCs, tritium, gross alpha and gross beta radiation, and nitrate, as required.

Liquid IDW consisting of well development water, purge water, and decontamination water will be temporarily stored in a centrally located water trough at the site. A sample of the water will be collected and analyzed for waste profiling purposes, as required. Samples would be transported to a subcontracted laboratory for analysis, which would include, but may not be limited to, the RCRA eight metals (arsenic, barium, cadmium, chromium, lead, mercury, silver, and selenium), VOCs, tritium, gross alpha and gross beta radiation, and nitrate, as required.

PERMITS AND OTHER AUTHORIZATIONS. EN will be responsible for securing all applicable permits and licenses required under WAC 173-160 or other applicable Federal, State, and local regulatory requirements to perform the site characterization borehole/well drilling, monitoring, and support activities. In accordance with Article 22(a) of the existing lease between DOE-RL and EN, EN will comply with applicable Federal, State, and local laws, ordinances, regulations, or instructions controlling the quality of the environment.

CONCLUSION. The proposed action to perform site characterization borehole/well drilling, monitoring, and support activities as described herein would have NEPA coverage under 10 CFR 1021, Subpart D, Appendix B, Categorical Exclusion B3.1, "Site Characterization and Environmental Monitoring." This CX addresses site characterization and environmental monitoring including, but not limited to, siting, construction, modification, operation, and dismantlement and removal or otherwise proper closure (such as of a well) of characterization and monitoring devices, and siting, construction, and associated operation of a small-scale laboratory building or renovation of a room in an existing building for sample analysis. Such activities would be designed in conformance with applicable requirements and use best management practices to limit the potential effects of any resultant ground disturbance. Covered activities include, but are not limited to, site characterization and environmental monitoring under CERCLA and RCRA. (This class of actions excludes activities in aquatic environments. See B3.16 of Appendix B for such activities.) Specific activities include, but are not limited to:

(a) Geological, geophysical (such as gravity, magnetic, electrical, seismic, radar, and temperature gradient), geochemical, and engineering surveys and mapping, and the establishment of survey marks. Seismic techniques would not include large-scale reflection or refraction testing;

(b) Installation and operation of field instruments (such as stream-gauging stations or flowmeasuring devices, telemetry systems, geochemical monitoring tools, and geophysical exploration tools); (c) Drilling of wells for sampling or monitoring of groundwater or the vadose (unsaturated) zone, well logging, and installation of water-level recording devices in wells; (d) Aquifer and underground reservoir response testing; (e) Installation and operation of ambient air monitoring equipment; (f) Sampling and characterization of water, soil, rock, or contaminants (such as drilling using truck- or mobile-scale equipment, and modification, use, and plugging of boreholes); (g) Sampling and characterization of water effluents, air emissions, or solid waste streams; (h) Installation and operation of meteorological towers and associated activities (such as assessment of potential wind energy resources); (i) Sampling of flora or fauna; and (j) Archaeological, historic, and cultural resource identification in compliance with 36 CFR part 800 and 43 CFR part 7. Any changes to the proposed action described in this NEPA review would require additional NEPA review and approval by the Hanford NEPA Compliance Officer, as applicable, potentially including, but not limited to, additional cultural and ecological resource reviews. This NEPA review only addresses site characterization borehole/well drilling, monitoring, and support activities as described herein, which are consistent with the project description for related cultural and ecological resource reviews. Future ARDP activities including, but not limited to, preconstruction and construction activities related to proposed ARDP structures and infrastructures are subject to additional NEPA review and approval by the Hanford NEPA Compliance Officer, as applicable, potentially including, but not limited to, additional cultural and ecological resource reviews. III. Existing Evaluations (Provide with NRSF to DOE NCO): Maps: Figure 1 - Aerial View of Energy Northwest Leased Site - Columbia Generating Station (WNP-2), WNP-1, and WNP-4 Figure 2 - WNP-1 Site Boundary, Groundwater Well Pair Locations, and Geologic Borehole Investigation Area Figure 3 - Regional Groundwater Flow Direction and Contours Figure 4 - Hanford Biological Resources Management Plan (BRMP) Habitat Levels in the Project Area Figure 5 - Area of Potential Effects Depicting Avoidance Area Figure 6 - Aerial Photograph of 618-11 Burial Ground Located Northwest of Columbia Generating Station Figure 7 - Location of 618-11 Burial Ground Relative to the WNP-1 Site Other Attachments: N/A IV. List Applicable CX(s) from Appendix B to Subpart D of 10 CFR 1021:

B3.1, Site Characterization and Environmental Monitoring

NEPA REVIEW SCREENING FORM 3		Document	Document ID #:	
Categorically Excluded Actions (Continued) DOE/C			-0022	21
V. Integral Elements and Extraordinary Circumstances (See 10 CFR 1021, Subpart D, B. Conditions that are Integral Elements of the Class of Actions in Appendix B; and 10 CFR 1021.410(b)(2) under Application of Categorical Exclusions)			Yes	No
Are there extraordinary circumstances that may affect the significance of the environmental effects of the proposed action? If yes, describe them.			0	۲
Is the proposed action connected to other actions with potentially significant impacts, or that could result in cumulatively significant impacts? If yes, describe them.			0	۲
Would the proposed action threaten a violation of applicable statutory, regulatory, or permit requirements related to the environment, safety, health, or similar requirements of DOE or Executive Orders?			0	۲
Would the proposed action require siting, construction, or major expansion of waste storage, disposal, recovery, or treatment facilities?			0	۲
Would the proposed action disturb hazardous substances, pollutants, contaminants, or natural gas products already in the environment such that there might be uncontrolled or unpermitted releases?			0	$\textcircled{\bullet}$
Would the proposed action have the potential to cause significant impacts on environmentally sensitive resources? See examples in Appendix B(4) to Subpart D of 10 CFR 1021.			0	۲
Would the proposed action involve genetically engineered organisms, synthetic biology, governmentally designated noxious weeds, or invasive species, such that the action is not contained or confined in a manner designed, operated, and conducted in accordance with applicable requirements to prevent unauthorized release into the environment?			0	۲
If "No" to all questions above, complete Section VI, and provide NRSF and any attachments to DOE NCO for review. If "Yes" to any of the questions above, contact DOE NCO for additional NEPA review.				
VI. Responsible Organization's Signatures:				
Initiator: Jerry W. Cammann, HMIS NEPA SME Print First and Last Name	JERRY CAMMANN (Affiliate) Signature / Date		00'	
Cognizant Program/Project Representative:				
James Lynch, DOE-RL/ORP PM Technical Lead	James Lynch Digite Date:	James Lynch Digitally signed by JAMES LYNCH Date: 2022.05.26 09:52:05 -07'00'		H 90'
Print First and Last Name	Signature / Date			
Based on my review of information conveyed to me concerning the proposed action, the proposed action fits within the specified $CX(s)$: X Yes \Box No				
William (Bill) Ostrum, DOE-EM NCO Print First and Last Name	William E. Ostrum Date: 2022.05.26 13:27:09 -04'00' Signature / Date			00'
NCO Comments:				

Figures for NEPA Review Screening Form DOE/CX-00221

"Site Characterization Borehole/Well Drilling at the Washington Nuclear Plant (WNP-1) Site in Support of Energy Northwest's Advanced Reactor Demonstration Program Environmental Report and Construction Permit Application to the United States Nuclear Regulatory Commission"



FIGURE 2 – WNP-1 SITE BOUNDARY, GROUNDWATER WELL PAIR LOCATIONS, AND GEOLOGIC BOREHOLE INVESTIGATION AREA



FIGURE 3 – REGIONAL GROUNDWATER FLOW DIRECTION AND CONTOURS



(Source: Freestone Environmental Services, Inc., May 2012, Energy Northwest Columbia Generating Station Groundwater Quality Study)

GW-S-1 GW-D-1 Geologic Borehole Investigation Area GW-S-2 GW-D-2 • GW-S-3 GW-D-3 GW-S-4 GW-D-4 (. GW-S-3 GW-D-3 LEGEND Extent of Main Map Site Characterization Project Area WNP-1 Site **BRMP Level 3 Habitat** BRMP Level 2 Habitat BRMP Level 1 Habitat Well Locations Figure 1. Project Area 500 1,000 1,500 2,000 ⊐ Feet ECR-2022-614 | ARDP Site Characterization Meters Hanford Site, Benton County, WA 200 400 600

FIGURE 4. HANFORD BIOLOGICAL RESOURCES MANAGEMENT PLAN (BRMP) HABITAT LEVELS IN THE PROJECT AREA



FIGURE 5. AREA OF POTENTIAL EFFECTS DEPICTING AVOIDANCE AREA







NOTE: Aerial Imagery, 2021, ESRI.

FIGURE 6 – AERIAL PHOTOGRAPH OF 618-11 BURIAL GROUND LOCATED NORTHWEST OF THE COLUMBIA GENERATING STATION



FIGURE 7 – LOCATION OF 618-11 BURIAL GROUND RELATIVE TO THE WNP-1 SITE

