DOE/EA–1562 – SA-1

SUPPLEMENT ANALYSIS TO FINAL ENVIRONMENTAL ASSESSMENT OF CONSTRUCTION AND OPERATION OF A PHYSICAL SCIENCES FACILITY AT THE PACIFIC NORTHWEST NATIONAL LABORATORY, RICHLAND, WASHINGTON

June 2013

U.S. Department of Energy

Pacific Northwest Site Office

Contents

Acronyms

APE	Area of Potential Effect
CEQ	Council on Environmental Quality
CFR	Code of Federal Regulations
DOE	U.S. Department of Energy
EA	Environmental Assessment
EMSL	William R. Wiley Environmental Molecular Sciences Laboratory
ESA	Endangered Species Act
FONSI	Finding of No Significant Impact
FY	fiscal year
LSW	Laboratory Support Warehouse
MOA	Memorandum of Agreement
NEPA	National Environmental Policy Act
PNNL	Pacific Northwest National Laboratory
PNSO	(DOE) Pacific Northwest Site Office
PSF	Physical Sciences Facility
R&D	research and development
SA	Supplement Analysis
SHPO	State Historic Preservation Office
TES	Threatened or endangered species
USFWS	U.S. Fish & Wildlife Service

Proposed Action: Construction and Operation of Research Buildings and Supporting Infrastructure, on the North Federal Campus, Pacific Northwest National Laboratory Site, Richland, Washington

The Pacific Northwest National Laboratory (PNNL) is a U.S. Department of Energy (DOE) Office of Science laboratory located in Richland, Washington. PNNL is operated by Battelle Memorial Institute, a private, non-profit, science and technology enterprise. As noted in the PNNL 2013 Laboratory Plan, PNNL's vision inspires and enables the delivery of world-leading science and technology in the following areas:

- controlling interactions across scales to enable scalable synthesis
- efficient and secure electricity management from generation to end use
- coupling earth and energy systems for sustainability
- signature discovery and exploitation for threat detection and reduction
- in situ chemical imaging and analysis
- accelerating innovation and discovery and transforming the conduct of science in the William R. Wiley Environmental Molecular Sciences Laboratory (EMSL)
- simulation and analytics.

In January 2007, in a Finding of No Significant Impact (FONSI) for the Final Environmental Assessment of Construction and Operation of a Physical Sciences Facility at the Pacific Northwest National Laboratory, Richland, Washington (DOE/EA-1562), the DOE determined that construction and operation of the Physical Sciences Facility (PSF) located on DOE property in Benton County, north of Richland, would not result in significant impacts to the environment (DOE 2007). Since that time, DOE has completed initial construction and now plans to initiate additional build out of the area assessed in DOE/EA-1562 to accommodate existing and anticipated capabilities needed to support the DOE Office of Science mission.

Consistent with the phased build-out approach assessed in DOE/EA-1562, DOE is currently planning construction and operation of additional facilities and associated parking lots for expanded chemical, physical, biological, process, and material science; instrumentation; and computational capabilities to support PNNL's core capabilities. Construction could include expansion of existing facilities as well as construction of new facilities as well as infrastructure upgrades needed for the operations of the planned facilities, including installation of new roads and utilities (e.g., water, natural gas, electric, sewer, and communications). All construction is proposed within the original footprint analyzed in DOE/EA-1562.

Although only the initial development of the PSF construction site was planned in detail at the time of DOE/EA-1562, to facilitate the envisioned 20-year build out and to avoid unacceptable segmentation under NEPA, impact analyses were based upon a phased build out of roughly 332,000 ft^2. In DOE/EA-1562, DOE noted that following the initial phase and prior to construction of additional modules, DOE would evaluate the NEPA documentation to confirm the continued applicability of the environmental review, and if necessary, conduct a supplemental review. This Supplement Analysis (SA) has been prepared to assist DOE in determining whether the anticipated impacts assessed in DOE/EA-1562 still bound the impacts anticipated from the currently contemplated activities or whether additional National Environmental Policy Act (NEPA) analyses are required to support its decision-making on the implementation of activities in accordance with the requirements established in Part 10 of the Code of Federal Regulations (CFR) 1021.314.

DOE/EA-1562 Assessment Scope and Findings

In DOE/EA-1562, DOE assessed the impacts of the construction and operation of the PSF, planned as facilities to be constructed in phases over a period of up to 20 years (as funding becomes available). The types of research capabilities that were assessed to be housed in these facilities include materials science and technology; radiation detection; ultra-trace detection; subsurface science; shielded operations; and chemistry and processing. Additional support areas or functions within, or adjacent to, PSF (e.g., a central utility plant, utility improvements, maintenance and fabrication support, parking, and a waste- management area) were also assessed.

In DOE/EA-1562, DOE assessed the impacts to 103 acres in the North Federal Campus (labeled PSF Construction Site in Figure 1) and characterized those impacts as follows:

- Land use – 50 acres would be changed from native vegetation to approximately 332,000 ft^2 of new research and development (R&D) facilities and supporting infrastructure (e.g., roads and parking). A 270-acre northern buffer area would be maintained for the safe and secure operations of the planned facilities.
- Biota – If the entire 103 acres was used, up to 64 acres of shrub-steppe habitat would be lost. To avoid potential impacts to ground- or shrub-nesting migratory birds that may be nesting in the project site, project activities would not be undertaken during the nesting season (i.e., March 1 through July 31).

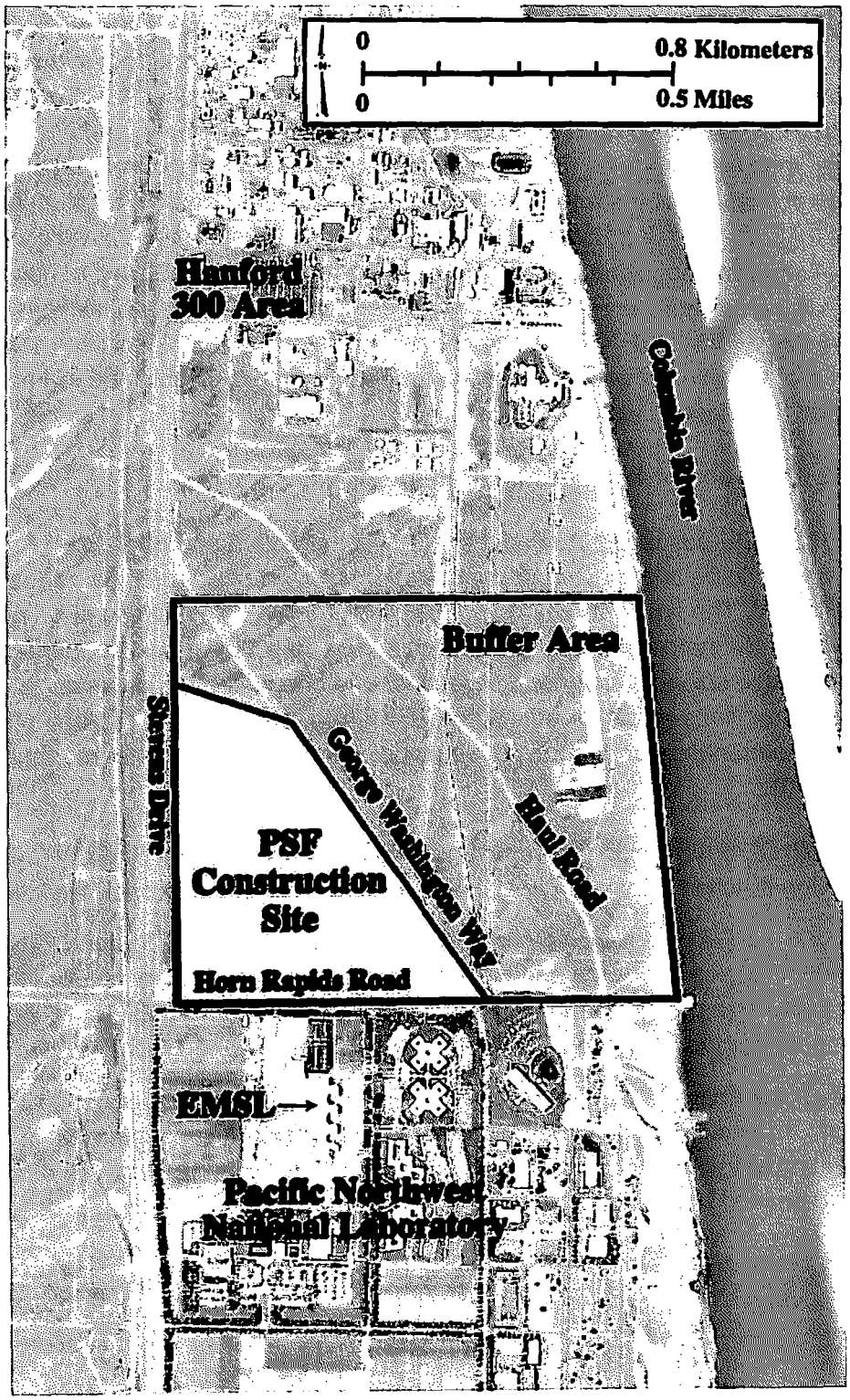

Figure 1. Proposed PSF Construction Site and Buffer Area Assessed in DOE/EA-1562

- Cultural – The DOE Pacific Northwest Site Office (PNSO) completed a cultural resource review of construction and operation of PSF in 2004 to meet the requirements under Section 106 of the National Historic Preservation Act. The results indicated construction within the Area of Potential Effect (APE) would have no adverse effect on historic properties, with the exception of the Richland Irrigation Canal (DOE/PNSO 2007). A Memorandum of Agreement (MOA) was developed with the State Historic Preservation Office (SHPO) to address the adverse effects. The terms and actions in the MOA were submitted and accepted by SHPO in 2007 (DOE/PNSO 2008). Requirements under the National Historic Preservation Act have been met and no further mitigation is required.
- Construction traffic – About 250 construction workers would be employed over a 2-year period and that there would a peak work force of about 450 workers. In later phases of construction, the overall impacts would be similar, but the peak work force may be somewhat smaller and the activities would occur over a longer period of time.
- Operational workforce – Eventually, the operational workforce would be approximately 480 full-time employees; however, many of those employees would come from existing 300 Area facilities subject to replacement, thus minimizing increased traffic.
- Chemical and Radiological Releases, including accidents and intentional destructive acts – Neither normal operations, accident conditions nor unanticipated intentional destructive acts would result in hazardous chemical or radiological releases that would impact the members of the public offsite of the PNNL campus.
- Waste – All waste streams would be directed to existing facilities; no new waste-treatment capacity would be needed.

In addition, DOE determined that there would be no potential to impact prime farmland, geological resources, surface water bodies, floodplains, wetlands, or threatened or endangered species because these features do not exist within the affected area. Further, DOE determined that there would be no opportunity for high and disproportionate adverse impacts on minority or low-income populations and that, taking into account ongoing operations in the region, there would be no noticeable cumulative impacts.

Current Conditions

Since the completion of DOE/EA-1562 and the subsequent FONSI, DOE has constructed and is operating the following components of the PSF:

- **Material Sciences & Technology Laboratory (3410) (79,878 ft^2; 64 employees)** – supports radiation materials science, high-temperature materials, fundamental mechanisms, computational materials science, mechanical properties characterization, and testing and component development of tritium-producing burnable absorber rods.
- **Radiation Detection Laboratory (3420) (81,369 ft^2; 130 employees)** – supports the development and application of radiation-detection methods needed for identifying weapons of mass destruction and terrorist activities in support of international treaties

and agreements. Functionality includes analytical chemistry, radiation physics, light detection, particle detection, and ultra-low level counting.

- **Ultra Low Background Counting Laboratory (3425) (7,418 ft^2; 0 employees)** – supports national security missions, including the development of advancement of radiation-detection technologies.
- **Ultra-Trace Laboratory (3430) (70,298 ft^2; 51 employees)** – houses a nuclear characterization laboratory and supports national security needs. Analysis capabilities include ultra-trace and low-level detection and characterization of radionuclides, which can be used for detecting weapons of mass destruction.
- **Large Detector Laboratory (3440) (5,488 ft^2; 2 employees)** – includes capabilities for ultra-low background radiation detection, advanced radiation detection and testing, border and interdiction technology, materials development and engineering, radiochemistry, quantitative radiation counting, and data analysis. An outdoor testing area (including a fenced-in, paved test loop) includes the capability to perform functional testing of the equipment developed at 3440.
- **PSF Office Trailer A and B (3455 and 3465) (1,792 ft^2; 6 employees)** – provides supplemental office space for PSF research staff.
- **Laboratory Support Warehouse (LSW) (20,092 ft^2; 2 employees)** – provides warehouse space for "just-in-time" managed PNNL central storage, excess material, redeployment functions, and general PSF storage.

Summary of completed actions:

- Operating laboratory, office, and support space – 266,335 ft^2.
- Current workforce – 255 staff are currently housed in PSF.
- Land-use change – 44.5 acres were disturbed during construction, including 36 acres that are maintained for facilities and grounds.
- Ecological impacts – approximately 13 acres of mature shrub-steppe and 31.5 acres of mixed native and non-native habitat was removed during Phase I construction. In addition, anecdotal observations were made documenting a bank swallow (*Riparia riparia*) colony using a stockpile of soil on the PSF construction site in late June 2010. Bank swallows are protected under the Migratory Bird Treaty Act. They excavate small diameter holes into firm, banked soils to build their nests and raise their young. In early July, a PNNL biologist noticed that a major portion of the stockpiled soil at the PSF construction site had been removed by subcontractors for landscaping, which resulted in the partial destruction of the bank swallow habitat within the stockpiled soil. As a result, on July 8, 2010, PNNL self-reported the event to the U.S. Fish & Wildlife Service (USFWS). The issue was investigated by USFWS and Battelle signed a non-prosecution agreement with the Department of Justice on September 28, 2012. Corrective measures have been put in place to prevent recurrence.

- Cultural resources impacts – PNSO completed a cultural resource review of construction and operation of PSF in 2003 to meet the requirements under Section 106 of the National Historic Preservation Act. The results indicated construction within the APE would have no adverse effect on historic properties, with the exception of the Richland Irrigation Canal. An MOA was developed with the SHPO to address the adverse effects. The terms and actions in the MOA were submitted and accepted by SHPO in 2007 (DOE/PNSO 2008). Requirements under the National Historic Preservation Act have been met and no further mitigation is required. Construction incidents – the number of incidents was below project target and industry days away restricted time off /total restricted case rate rates.
- Chemical and Radiological Releases, including accidents and intentional destructive acts – since the start of operations, neither normal operations, accident conditions nor unanticipated intentional destructive acts have resulted in hazardous chemical or radiological releases that affected members of the public.

Proposed Action

The proposed action is the potential construction of a revised mix of new facilities or expansion of existing facilities within a subset of the 68 acres analyzed as part of the PSF construction site in DOE/EA-1562. During the next 5 to 10 years, DOE plans to develop new office, research, and support facilities within this area similar to those in use on the PNNL campus. Currently 36 acres of the action area is covered by the constructed PSF facilities/maintained grounds. The other 32 acres of land to the west and north is a mix of native and non-native habitats described below (Proposed Action Area in Figure 2). The site proposed for construction of the generic research facilities and infrastructure is within the original footprint analyzed in DOE/EA-1562 (Figure 2). Based on a variety of considerations (e.g., funding availability, mission changes, etc.), it is unclear if or when DOE can commit to pursuing this potential action; through this analysis, DOE is integrating environmental values into the decision-making processes by considering the environmental impacts of this potential action. DOE does anticipate that infrastructure improvements would precede facility construction and could occur as early as late 2013 and/or 2014.

Research facilities would be generic in nature, able to support multiple types of research (e.g., chemical, physical, biological, process science, imaging, and computational) in support of PNNL's core capabilities. A building control center could also be housed within the action area. This control center would utilize advanced metering data (e.g., natural gas, electrical, and water usage) and building control system information to support daily building operations monitoring. It would provide a diagnostic tool to reduce energy use, reduce operational and maintenance costs, and extend equipment life. Office space and other support space would promote general campus operations. The proposed action area is bounded by George Washington Way on the east, Horn Rapids Road on the south, Stevens Drive on the west, an east-west line between George Washington Way and Stevens Drive that is approximately 120 feet north of the existing LSW. These facilities are envisioned to range in size from 15,000 to 25,000 ft^2. Though

planning is only in the conceptual stage, early estimations indicate that the area could support approximately 100,000 to 150,000 ft^2 of facilities.

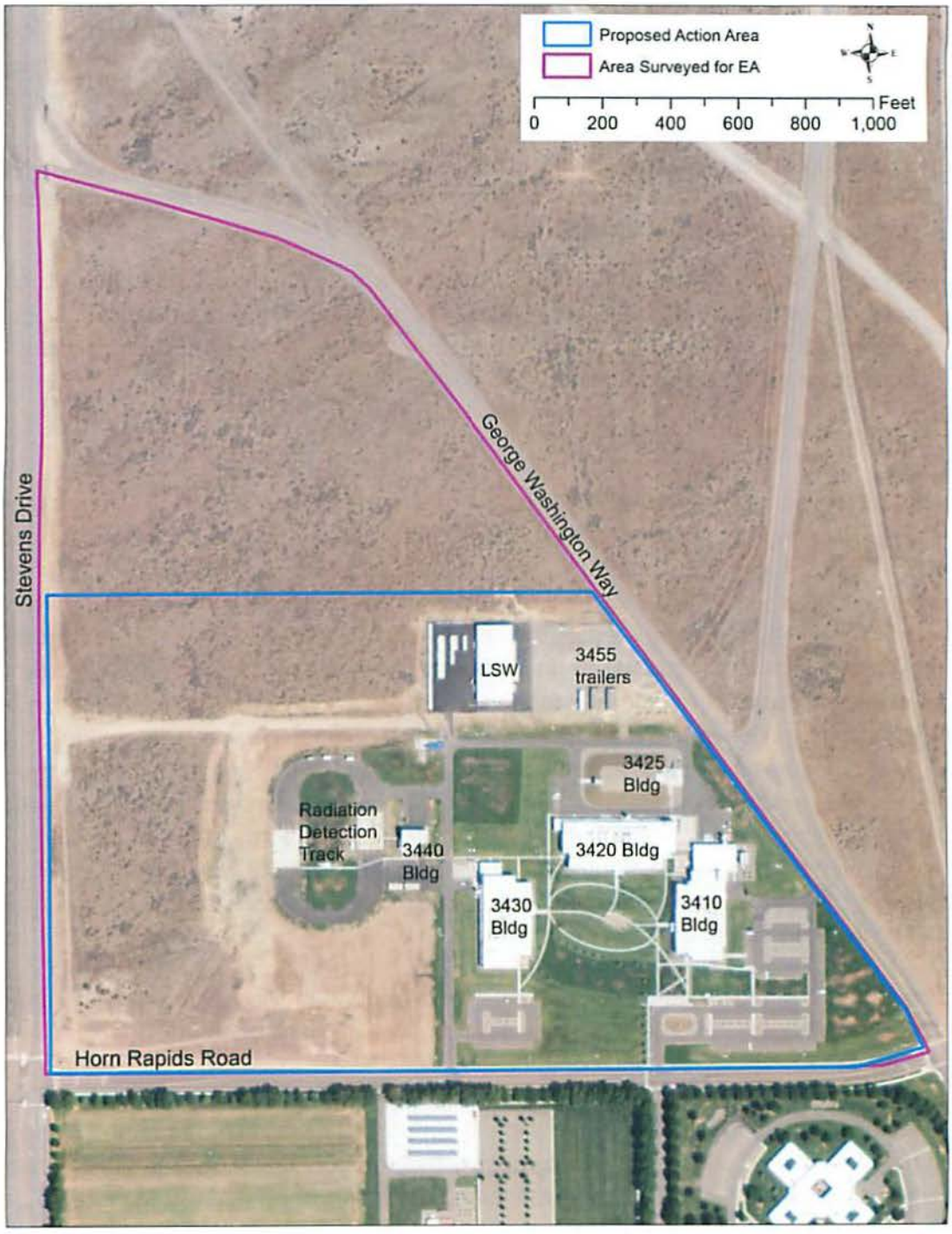

Figure 2. Locations of Existing Facilities and Associated Grounds and the Proposed Action Area

Biological Resources Review

Consistent with DOE procedures and to support this SA, a *Biological Review of the Land Area Proposed for Phase II Construction and Operation of Research Buildings and Supporting Infrastructure in the North Federal Campus, Pacific Northwest National Laboratory Site, Richland, Washington, ECR #2013-PNSO-001*, has been prepared to review the biological impacts of the proposed actions and is included as Appendix A to this SA. The survey objectives of the biological review included the following:

- determine the occurrence in the proposed action area of plant and animal species protected under the Endangered Species Act (ESA); candidates for such protection; species listed as threatened, endangered, candidate, sensitive, or monitor by the state of Washington; and species protected under the Migratory Bird Treaty Act
- evaluate and quantify the potential impacts of disturbance on priority habitats and protected plant and animal species identified in the survey.

Consistent with the biological assessment performed for DOE/EA-1562, the current biological review found no plant species protected under the ESA, candidates for such protection, or plant species listed by the state of Washington as threatened or endangered in the area proposed for the remaining build-out on a subset of the PSF construction site. The review also confirmed stands of mature shrub-steppe habitat, a priority habitat in Washington State, within the proposed impact area (Figure 3). The original environmental assessment (EA) and resulting FONSI found that there were no significant biological impacts associated with removal of this habitat during construction. Therefore, no mitigation was required as a result of the EA and FONSI. However, in 2008, as part of the PNSO Cultural and Biological Resources Management Plan, PNSO began requiring mitigation for removal of priority habitats (DOE/PNSO 2008). Therefore, a mitigation action plan, included as Appendix B to this SA, has been developed to address the loss of priority habitats on federal lands due to this proposed action. Compensatory mitigation of shrub-steppe habitat would be performed in accordance with DOE guidelines and as outlined in the mitigation plan. In addition, the mitigation action plan includes recommendations to reduce and eliminate impacts to biological resources. The project would comply with all considerations and recommendations described in the biological review and mitigation action plan, including the following:

- If possible, ground-disturbing activities, off-road driving, clearing of vegetation, and related activities associated with the proposed work would be conducted only before or after the nesting season, to avoid any impacts to nesting migratory birds. If initial clearing, grading, or ground-disturbing activities are expected to occur during the nesting season (March 1 and July 31), the project would contact a PNNL staff biologist for development of additional mitigation and monitoring to prevent nesting activities and avoid impacts to migratory birds.

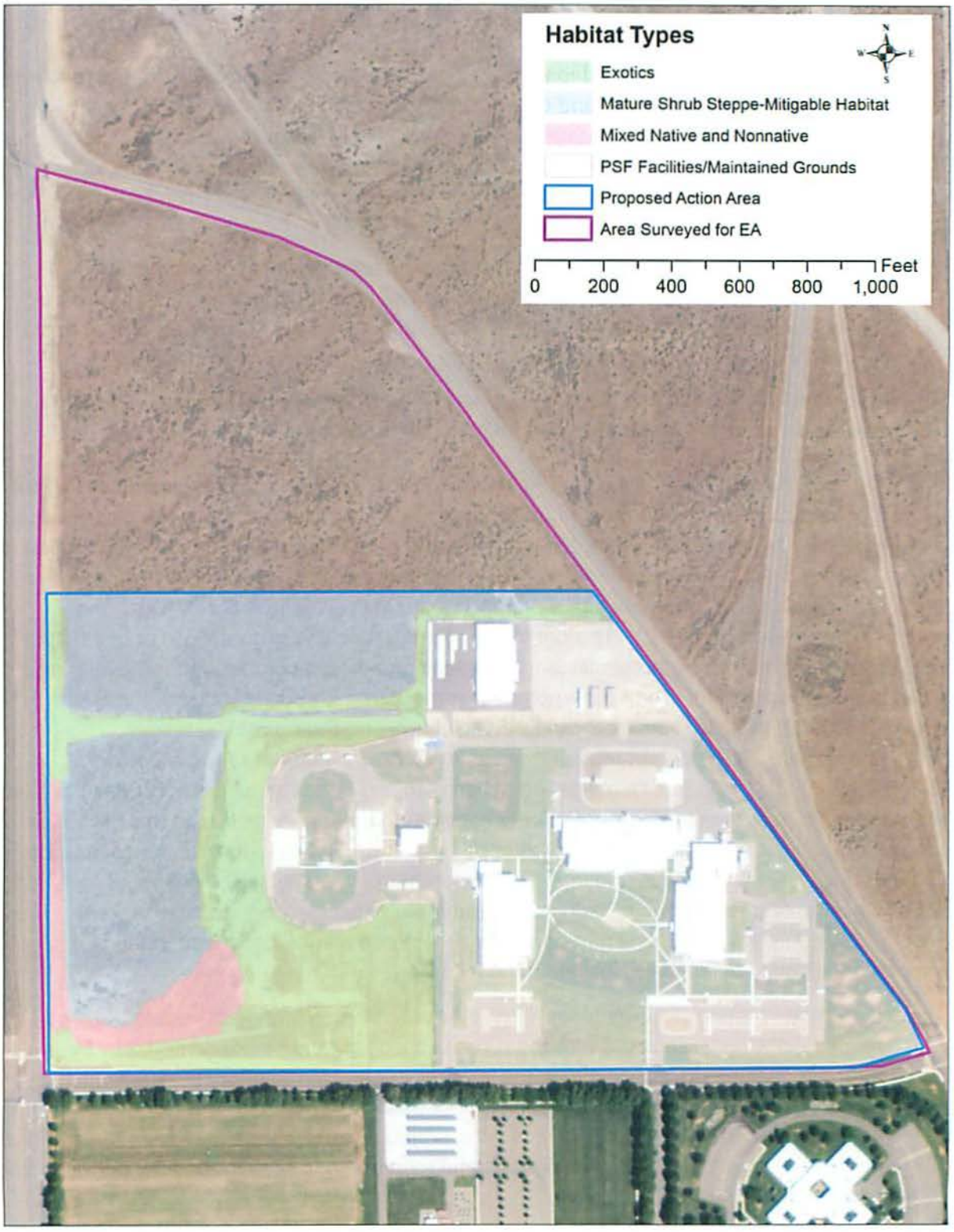

Figure 3. Habitat Types Within the Proposed Action Area (See Proposed Action for area description)

- Construction activities may occur in the surveyed area at various times over the next 5 to 10 years. Therefore, if an area of the project that has been surveyed for migratory birds this year would be disturbed by construction activities during a subsequent nesting season, the project would contact a PNNL staff biologist to inspect for ground- and shrub-nesting migratory birds prior to disturbance.
- If project-construction activities in an area are considered complete, but follow-on activities are needed during the nesting season that would cause further disturbance to previously disturbed ground or vegetative habitat (e.g., removal or re-use of stockpiled soil, removal or destruction piled vegetative debris), the project would contact a PNNL staff biologist to inspect for ground- and shrub-nesting migratory birds prior to disturbance.
- The project would follow existing internal PNNL procedures and terms of the Battelle Contractor Environment, Safety, and Health Manual for Subcontractors to prevent creation of habitat suitable for bank swallow nesting burrows.
- The project would minimize off-road travel to reduce the potential for spreading weeds, particularly rush skeleton weed and diffuse knapweed (*Centaurea diffusa*). In addition, prior to using seed mixes to revegetate disturbed areas in or adjacent to natural areas, a PNNL staff biologist would be contacted to assure that the mix is compatible with native vegetation and does not contain seeds from invasive or noxious species.
- The project would clear and grade in the area planned for construction in the same year construction would commence to minimize the spread of weeds, avoid wind erosion, and delay impacts to biological resources.

Cultural, Historical, and Archaeological Resources Review

Impacts to historic properties were previously considered in the 2003 *Cultural Resources Review of PNNL Capability Replacement Laboratories Construction Site* (HCRC #2003-300-013). The project description for that review included construction of new laboratory facilities in a 100 acre triangular parcel north of Horn Rapids Road. The proposed activities are within the original 100 acre APE. Although HCR#2003-300-013 included construction of facilities within the APE, a new *Cultural Resources Assessment for the Land Area Proposed for Phase II Construction and Operation of Research Buildings and Supporting Infrastructure in the North Federal Campus, Pacific Northwest National Laboratory Site*, HCRC#2013-PNSO-001, has been prepared and is included as Appendix C to this SA. This new report was prepared to assess the applicability of the previous cultural assessment for DOE/EA-1562 for the current proposed action.

In DOE/EA-1562, it was determined that the undertaking would result in the destruction of the portion of the Richland Irrigation Canal within the APE, resulting in an adverse effect. An MOA was created to resolve adverse effects. The current evaluation affirms this finding and confirms that mitigation was completed in accordance with the MOA. The proposed action is considered covered by the undertaking evaluated in HCRC#2003-300-013. No further mitigation is required.

Cumulative Impacts Review

Cumulative impacts of construction and operations beyond the initial construction completed were initially summarized in DOE/EA-1562. This section provides additional discussion regarding cumulative impacts that might be associated with implementing the proposed construction and operation of the next phases of development in previously analyzed action area.

In 40 CFR 1508.7, the Council on Environmental Quality (CEQ) defines cumulative impact as:

> ...the impact on the environment from the incremental impact of the action when added to other past, present, and reasonably future actions regardless of what agency (federal or non-federal) or person undertakes such actions. Cumulative impacts can result from individually minor but collectively significant actions taking place over a period of time.

However, the CEQ cautioned that, "The continuing challenge of cumulative effects analysis is to focus on important cumulative issues..." (CEQ 1997).

As indicated in previous sections of this SA, impacts in all resource areas are projected to be minimal. Historically, potential radiological impacts on human health and safety, which are considered in terms of cumulative impacts, have been the environmental impact of most interest to the public. The area most likely to be influenced by the proposed action consists principally of the northern portion of Richland, Washington and a rural area of Franklin County (located to the east, across the Columbia River from the North Federal Campus).

Past Hanford Site activities with the largest impact on the area of interest include fuel-fabrication facilities, production reactors, separations and product-finishing plants, and onsite R&D facilities supporting national defense programs. Principally, environmental impacts have been the result releases of radioactive material to air, water, and ground that occurred during production of nuclear materials for national defense during World War II and the following Cold War era. While historical activities that have resulted in radiological impacts may be significant, the incremental impact of the proposed action would not noticeably contribute to this cumulative effect.

Other ongoing or reasonably foreseeable future actions in the vicinity that might also have a radiological or non-radiological impact on the same area of interest include those associated with the following operations:

- Ongoing operation of facilities on the PNNL campus.
- DOE-RL proposes to convey approximately 1,641 acres of Hanford land to the Tri-City Development Council for the purposes of facilitating local economic development and assisting the local community in the transition away from an economy focused largely on DOE- and Hanford-related funding (77 FR 58112). This land lies adjacent to the western edge of the North Federal Campus. This action is being analyzed by DOE-RL under an EA that includes 4,413 acres.

- DOE-RL proposes to connect the Hanford Site Central Plateau with natural gas service via a new pipeline (77 FR 3255). The pipeline would deliver natural gas to support the Waste Treatment Plant and the 242-A Evaporator operations in the 200 East Area of the Hanford Site. Alternative pipeline routes being evaluated would begin in Franklin County and cross under the Columbia River in or near the Hanford 300 Area, near the Phase II proposed action. The proposed pipeline is estimated to be about 30 miles in length.
- DOE proposes to add approximately 100,000 ft^2 of office and laboratory space to a portion of the PNNL campus, near the EMSL facility, south of Horn Rapid Road. This action is being analyzed by DOE-PNSO under DOE/EA-1958.
- CERCLA remediation projects, including cleanup of the 618-10 and 618-11 burial ground sites and the 300 Area, and remediation of the river corridor in the southeastern portion of the Hanford Site.
- Ongoing waste management and cleanup of the Hanford Site in general.
- The Columbia Generating Station, a commercial nuclear power plant located north of the 300 Area and operated by Energy Northwest.
- A nuclear-fuel-fabrication plant operated by AREVA (radiological).
- The AMEC Geo Melt Test Site (pilot tests of bulk waste vitrification).
- The DOE Cold Test Facility (non-radiological testing of vitrification processes).
- Perma-Fix Northwest (a waste-management company – formerly Allied Technology Group and Pacific EcoSolutions) (radiological).
- Ferguson Distribution Center (commodity distribution).
- A titanium-zirconium processing center operated by International Hearth Melting.
- Meyer Plastics (industrial plastics producer).

At this time, DOE has not identified additional planned facilities in the vicinity of the proposed action area, beyond those listed above or addressed by the proposed action.

Impacts from construction activities (e.g., additional traffic and construction emissions) would be temporary and similar to those associated with any other commercial building of comparable size. Construction is not expected to affect resources that are unique, in short supply, or otherwise sensitive; therefore, cumulative impacts on such resources would be negligible.

As determined in the DOE/EA-1562, construction and operation of facilities on the North Federal Campus would not result in significant adverse impacts to the environment, including biological resources. However, since that assessment, DOE developed resource-management policies for the PNNL Site including mitigation for loss of priority habitats (DOE/PNSO 2008). Mature shrub-steppe is one of the habitat types classified as a priority habitat within Washington State (WDFW 2008). The proposed action would result in loss of approximately 16.3 acres of mature

shrub-steppe. DOE prepared a mitigation action plan to address the loss of priority habitat due to the proposed construction and minimize or avoid potential impacts to biological resources, included as Appendix B of this document. While the settlement of Eastern Washington has resulted in the cumulative loss over time of more the 6 million acres of original shrub-steppe habitat, the incremental impact of the contemplated activities in the North Federal Campus would not noticeably contribute to this cumulative effect.

Contemplated construction activities would not result in additional impacts to cultural or historic resources beyond those identified in DOE/EA-1562.

Other types of impacts from contemplated construction and operations were found to be small and would be, in general, similar to those from current PNNL activities nearby. Therefore, these activities would result in minimal net change to cumulative impacts on the surrounding environment. All expected impacts from contemplated construction and operations activities are bounded by the analysis in DOE/EA-1562.

Comparison of Currently Proposed Actions to DOE/EA-1562

To support its decision on whether the DOE/EA-1562 should be supplemented, DOE has summarized the impacts from completed and planned activities and compared these to the impacts assessed by the DOE/EA-1562 and subsequent FONSI. The summary and comparison is shown in Table 1.

Table 1. Summary of Completed and Planned Construction and Operation Impacts

Impact Area	DOE/EA-1562 Assessment	Impacts of Completed Actions	Impacts of Planned Actions	Comparison to DOE/EA-1562
Land use	50 of the 103 acres assessed would be converted to R&D facilities.	44.5 acres	The planned actions may occur within the original 44.5 acres disturbed during Phase I activities or within 23.5 acres that were not disturbed during Phase I activities.	Up to 68 acres would be disturbed (44.5 acres of land originally disturbed during initial PSF construction plus 23.5 acres not affected during initial construction), all within the overall 103 acre impact footprint assessed by DOE/EA-1562. No significant change.
Office/laboratory space	332,000 ft^2	266,335 ft^2	up to 150,000 ft^2	Potential increase of 84,335 ft^2. This office space is still within the overall 103 acre impact footprint assessed by DOE/EA-1562. No significant change.
Biota	If the entire 103 acres were converted to R&D facilities, 64 acres of shrub-steppe would be lost.	44.5 acres removed; approximately 13 acres of mature shrub-steppe and 31.5 acres of mixed native and non-native habitat.[(a)]	Modifications to PSF facilities and grounds will not cause significant impacts. Up to 16.3 acres of mature shrub-steppe habitat, 2.3 acres of native and non-native steppe habitat, and 12.7 acres of habitat dominated primarily by exotic vegetation would be removed.	Total acreage of mature shrub-steppe affected is approximately 29.3 acres (Initial development, loss of 13 acres; Planned development, loss of up to 16.3 acres). This is included in the original 64 acres of shrub-steppe considered in DOE/EA-1562. No change.
Buffer area	Property north and east of the area surveyed for the EA would serve as a restricted access buffer. No construction is currently planned in this area.	No construction in the area.	No construction planned for this area.	No change.
Cultural	Historic canal would be adversely affected. MOA with SHPO to mitigate affects.	Mitigation completed.	No new impacts.	No change.

Table 1. (contd)

Impact Area	DOE/EA-1562 Assessment	Impacts of Completed Actions	Impacts of Planned Actions	Comparison to DOE/EA-1562
Construction traffic	About 250 construction workers would be employed over a 2-year period and that there would a peak work force of about 450 workers. In later phases of construction, the overall impacts would be similar, but the peak work force may be somewhat smaller and the activities would occur over a longer period of time.	Average of 102 construction workers throughout initial development with a peak of 306 workers.	25-40 workers during an 18-24 month period for a typically sized facility.	Lower peak and average workforce over longer timeframe due to phasing; impacts bounded by DOE/EA-1562.
Workforce	480 full-time equivalents	255 staff	25-75 new staff	Total employment bounded by DOE/EA-1562.
Operational or accident impacts to the public including intentional destructive acts	None	Operations have had no impacts on workers or the public.	No radiological component; chemical and other hazards are bounded by DOE/EA-1562.	No change
Waste streams	Managed by existing facilities.	Existing facilities have proven adequate.	Managed by existing facilities.	No change.

(a) A bank swallow colony established in a stockpiled topsoil pile on the PSF construction site, and protected under the Migratory Bird Treaty Act was partially destroyed in July 2010. Following a USFWS investigation, Battelle signed a non-prosecution agreement with the Department of Justice on September 28, 2012.

Conclusions

Although the potential square footage of the facilities proposed to be constructed during the remaining development of the PSF construction site could exceed the square footage estimated in DOE/EA-1562 by approximately 25 percent and the mix of facilities has been revised, the overall construction footprint would reside within the same 103-acre impact area assessed in DOE/EA-1562 and the analyzed impacts remain bounding. Based on the updated biological and cultural reviews and the comparison of impacts between DOE/EA-1562, current operations, and the proposed actions, it has been determined that the impacts of actions proposed for the remaining development of the PSF construction site would not be significant and are bounded by the analyses in DOE/EA-1562 and that the effects of the proposed action can be adequately mitigated, resulting in no unacceptable adverse impacts.

Determination

Based on the information provided in this SA, I have determined that no further NEPA documentation is required for the proposed actions with the analyzed PSF construction site and that the conclusions of the *Finding of No Significant Impact* signed on January 29, 2007 for *the Final Environmental Assessment of the Construction and Operation of a Physical Sciences Facility at the Pacific Northwest National Laboratory, Richland, Washington*, DOE/EA-1562, remain valid for this action.

Issued in Richland this 14th day of June 2013.

SIGNED BY Roger Snyder

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Appendix A – Biological Review of the Land Area Proposed for Phase II Construction and Operation of Research Buildings and Supporting Infrastructure in the North Federal Campus, Pacific Northwest National Laboratory Site, Richland, Washington, ECR #2013-PNSO-001

Pacific Northwest
NATIONAL LABORATORY

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April 22, 2013

Mr. Bill Steward
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Dear Mr. Steward:

Biological Review of the Land Area Proposed for Phase II Construction and Operation of Research Buildings and Supporting Infrastructure in the North Federal Campus, Pacific Northwest National Laboratory Site, Richland, Washington, ECR #2013-PNSO-001

Project Description:

In January 2007, in a Finding of No Significant Impact (FONSI) for the Final Environmental Assessment of Construction and Operation of a Physical Sciences Facility at the Pacific Northwest National Laboratory (PNNL), Richland, Washington (DOE/EA-1562), the U.S. Department of Energy (DOE) determined that construction and operation of the Physical Sciences Facility (PSF), located on DOE property within the PNNL North Federal Campus in Benton County, would not result in significant impacts to the environment. Since that time, DOE has completed Phase I construction and now plans to initiate Phase II of the planned 20-year build out of the area assessed in DOE/EA-1562 (referred to here as the EA) to accommodate existing and anticipated capabilities needed to support the DOE Office of Science mission.

Consistent with the phased build-out approach assessed in the EA, for Phase II DOE is planning construction and operation of facilities, infrastructure and associated parking lots for expanded chemical, physical, biological, process science, and computational capabilities to support PNNL's core capabilities within the North Federal Campus. Construction could include expansion of existing facilities as well as construction of new facilities. In addition, Phase II includes infrastructure upgrades needed for the operations of the planned facilities, including installation of new roads and utilities (e.g., water, natural gas, electric, sewer, and communications). Construction of infrastructure is planned to begin in calendar year 2013.

The proposed action area for Phase II facilities and associated infrastructure comprises approximately 68 acres (Figure 1) and includes PSF facilities and maintained grounds. Construction of the new facilities and associated infrastructure will involve clearing and grading the footprint of the buildings and infrastructure, as well as clearing and grading land areas needed to support construction activities and material laydown during construction. Installation/construction activities will be conducted in accordance with all applicable codes and standards.

This review addresses the land areas within the original EA footprint on the North Federal Campus where Phase II construction of new buildings and infrastructure is planned over the next 5 to 10 years (Figure 1). It identifies potential impacts to biological resources across the Phase II construction footprint, although some construction activities may not begin for over a year. This review will allow impacts to be evaluated and planning for avoidance and mitigation of such impacts to be conducted in a consistent, responsible, and cost-effective manner.

Survey Objectives:

- Determine the occurrence in the proposed project area (~ 29 acres of undeveloped habitat as well as ~ 39 acres associated with existing facilities) of plant and animal species protected under the Endangered Species Act (ESA); candidates for such protection; and species listed as threatened, endangered, candidate, sensitive, or monitor by the State of Washington; and species protected under the Migratory Bird Treaty Act (MBTA).

- Evaluate and quantify the potential impacts of disturbance on priority habitats and protected plant and animal species identified in the survey.

Survey Methods:

J.L. Downs and M.A. Chamness performed pedestrian and visual reconnaissance of the undeveloped portions of the proposed action area (~29 acres) on October 15 and November 30, 2012 to map and evaluate the habitats within the potential construction area. Additional vegetation sampling and survey of the project area was conducted on October 16, 2012 to quantify the approximate proportions of native and non-native plant species within the different habitat areas. Shrub cover was measured by sampling and confirmed through a visual estimate by experienced shrub-steppe biologists. Data collected by sampling and pedestrian survey were used to map the biological resources currently existing in the proposed project area and to classify the biological resources according to their habitat and species value (DOE 2001; 2003). PSF facilities and maintained grounds were surveyed by the same staff on April 18, 2013.

Direct and indirect wildlife observations were recorded during the surveys and prior baseline survey records for the North Federal Campus from July 2012 documenting wildlife and plant life in the area of review were evaluated.

Priority habitats and species of concern were documented by Washington Department of Fish and Wildlife (2008, 2011) and Washington State Department of Natural Resources (2009). Lists of animal and plant species considered endangered, threatened, proposed, or candidate by the U.S. Fish and Wildlife Service are maintained in Part 50 of the Code of Federal Regulations (CFR) 17.11 and 50 CFR 17.12. The list of birds protected under the MBTA is maintained by the USFWS (2011).

Survey Results:

A total of 68 acres was surveyed for the proposed action. Nearly 36.3 of those acres are currently used for existing PSF facilities and maintained grounds (i.e., lawns, plantings, laydown areas and parking lots) around those facilities. Surveys in April 2013 noted several migratory bird species using the maintained grounds as well as a Nuttall's or mountain cottontail (*Sylvilagus nuttallii*). None of the bird species were observed at or in nests or appeared to be engaged in nest-building activities. Birds observed on the maintained grounds included the

magpie (*Pica pica*), American robin (*Turdus migratorius*), killdeer (*Charadrius vociferus*), European starling (*Sturnus vulgaris*), house finch (*Haemorhous mexicanus*),

Approximately 12.7 acres of the proposed action area has been previously cleared and disturbed. These previously disturbed areas are shown in Figure 2 as "exotics" and consist of a mixture of primarily exotic (i.e., non-native) weedy plant species growing in association with some native species. An area just to the south of the radiation-detection track and others north and west of the Laboratory Support Warehouse appear to have been reseeded with a commercial wildflower seed mix with varying levels of success in re-establishing vegetation containing both native and non-native species. On these previously cleared areas, sampling shows that exotic species comprise about 50% canopy cover, with cheatgrass (*Bromus tectorum*, 23%) and Russian thistle (*Salsola tragus*, 11%) dominating the southern portions of these mapped areas. Native plant cover was approximately 15% in these areas. Class B noxious weeds including rush skeleton weed (*Chondrilla juncea*) were found at the southern extent of the surveyed areas. Other weeds, such as puncture vine or tackweed (*Tribulus terrestris*) were common. Some small mammal signs (e.g., burrows and northern pocket gopher [*Thomomys talpoides*] push mounds) were noted in these areas.

Approximately 16.3 acres of the proposed action area include a sagebrush stand and adjacent stabilized dune that are classed as mature shrub-steppe habitat (Figure 2). This is a priority habitat within Washington State. A total of 21 native plant species and 6 non-native species were observed in these areas during the reconnaissance surveys in October and November. Dominant shrubs in the mature shrub-steppe area were antelope bitterbrush (*Purshia tridentata)* and Wyoming big sagebrush (*Artemisia tridentata*) and sampling results indicated combined cover of these species was estimated to be 12 to 15%. Native bunchgrasses, including Sandberg's bluegrass (*Poa secunda*), needle-and-thread grass (*Hesperostipa comata*) and Indian ricegrass (*Achnatherum hymenoides*) were common (up to 40% of the measured vegetation cover). Perennial forbs observed in mature sagebrush steppe included long-leaf phlox (*Phlox longifolia*), common yarrow (*Achillea millefolium*), pale evening primrose (*Oenothera pallida*), and hoary aster (*Machaeranthera canescens*). Mature soil biological crusts were present throughout much of the shrub-steppe stand.

The remaining 2.3 acres of the Phase II Site consist of a patchy, mixed community of native and non-native vegetation (Figure 2). Non-native Russian thistle and cheatgrass together comprise approximately 30 percent cover within the area. Dominant native plant species observed in the area were snow buckwheat (*Eriogonum niveum*, 12.5 percent) and native perennial bunchgrasses (20 percent) including Sandberg's bluegrass, needle-and-thread grass, Indian ricegrass, and sand dropseed (*Sporobolus cryptandrus*). Shrubs present in this habitat included scattered Wyoming big sagebrush, green rabbitbrush (*Chrysothamnus viscidiflorus*), and gray rabbitbrush (*Ericameria nauseosa*).

Small mammal signs, including pocket gopher push mounds and burrows were noted throughout the areas surveyed. In addition, evidence indicated that mule deer (*Odocoileus hemionus*) and coyote (*Canis latrans*) use the area. Black-billed magpies (*Pica pica*) were observed in the area during the October survey. Other birds observed in North Federal Campus baseline surveys of this area in July 2012 by J.M. Becker included those shown in Table 1. Habitat suitable for bank swallow (*Riparia riparia*) nests was not observed within the proposed Phase II Site during the surveys outside the nesting season.

Table 1. Birds Observed During 2012 Baseline Surveys of the Phase II Construction Areas on the North Federal Campus

Common Name	Latin Name
American robin	*Turdus migratorius*
house finch	*Carpodacus mexicanus*
sage sparrow	*Amphispiza belli*
fox sparrow	*Passerella iliaca*
horned lark	*Eremophila alpestris*
western meadowlark	*Sturnella neglecta*
mourning dove	*Zenaida macroura*

Considerations and Recommendations:

- The biological review considered an area of approximately 68 acres that may be used for construction of additional facilities and infrastructure within the next 5-10 years.
- No plant species protected under the ESA, candidates for such protection, or plant species listed by the State of Washington as threatened or endangered were observed in the area proposed for construction development.
- The sage sparrow is a Washington State candidate for listing as threatened and endangered. This species has been observed in the mature shrub-steppe habitat in the proposed development area.
- The migratory bird nesting season begins around March 1 and extends through the end of July. Ground-disturbing activities, off-road driving, clearing of vegetation and related activities associated with the proposed work should be conducted only before or after the nesting season, to avoid any impacts to nesting migratory birds. Any work scheduled to be conducted between March 1 and July 31 will require additional biological survey and review before and during these activities to avoid impacts to migratory birds. If clearing, grading, or other activities that could disturb the soil, vegetation, or structures that could provide nesting habitat are expected to occur within the window of time after March 1 and into the nesting season, the project should contact PNNL biologists for survey and evaluation of potential impacts to ground- or shrub-nesting migratory birds before initiation of any construction or related follow-on activities (e.g., removal or re-use of stockpiled soil, removal or destruction of piled vegetative debris), maintenance, repair, and/or demolition activities that would occur during the nesting season. If work is scheduled within the March through July nesting season, project staff should plan to work with PNNL biologists in advance of the nesting season to develop strategies and implement nesting deterrents (e.g., reflective tape and noise makers) before work progresses to avoid impacts to nesting birds. Please contact J.L. Downs at 371-7169 for consultation and biological review of areas before initiating any work during the nesting season.
- Construction activities may occur in the surveyed area at various times over the next 5-10 years. The use of an area by migratory birds for nesting may change from year to year based on species-specific factors and changing site conditions. Thus, survey results from one year cannot be used to predict future use of an area by nesting

migratory birds in subsequent years. Therefore, if an area of the project previously surveyed for migratory birds will be disturbed by construction activities during a subsequent nesting season, it will need to be re-surveyed for ground- and shrub-nesting migratory birds before initiating work. In addition, construction activities may create new habitat conditions suitable for migratory bird nesting. For example, stockpiling soil with vertical or near-vertical surfaces creates potential bank swallow (*Riparia riparia*) nesting habitat (the species nests in holes it excavates in vertical dirt banks). Removal or re-use of such stockpiled soil during the nesting season could adversely impact bank swallows, if present. Another example includes piling cleared vegetation, which creates potential habitat for nesting migratory birds that could be adversely affected by removal or destruction of such debris during the nesting season. Therefore, if project-construction activities in an area are considered to be complete but follow-on activities are needed during the nesting season that would cause further disturbance to ground or vegetative habitat that was previously disturbed or created by project construction (e.g., removal or re-use of stockpiled soil, removal or destruction piled vegetative debris), such areas will need to be re-surveyed for ground- and shrub-nesting migratory birds before disturbance.

- For activities that stockpile mounds of soil, work should follow existing internal PNNL procedures and language in the Battelle Contractor Environment, Safety and Health Manual to prevent creation of habitat suitable for bank swallow nesting burrows. Annual monitoring of long-term projects is recommended, including reviews to address changing site conditions. The intent of these guidelines is to prevent the destruction of migratory birds and their nests, eggs, and young protected by the MBTA, throughout the life of the project.

- Note that even if a biological survey of natural habitats and project areas does not indicate or identify nesting birds or observe nesting activities in the surveyed area, workers should be made aware that migratory birds may potentially move into and commence nesting activities in an area before work begins. Thus, if workers encounter any nesting birds, or encounter a pair of birds of the same species, or a single bird that will not leave the area when disturbed, or if they observe defensive behaviors (such as flying at workers or strident vocalizations), workers are advised to stop work and notify a qualified biologist (J.L. Downs, 371-7169) for further consultation.

- Ground-disturbing activities, such as those associated with the proposed work also present the potential for transporting, spreading, and increasing noxious weed species. Class B noxious weeds were located in previously disturbed portions of the proposed project area. Off-road travel should be minimized to reduce the potential for spreading weeds, particularly rush skeleton weed and diffuse knapweed (*Centaurea diffusa*). Construction equipment may need to be inspected and cleaned before leaving the area to avoid transport of weed seeds and plant materials. Plants listed as Class B noxious weeds in Washington State require efforts to contain existing populations and prevent their spread to new areas. Any seed mixes to be used to restore disturbed areas in or adjacent to natural areas should be reviewed by J.L. Downs to assure compatibility with native vegetation and confirm the mix does not contain seeds from invasive or noxious species.

- Mature shrub-steppe is classified as a priority habitat within Washington State. Grading and clearing of mature shrub-steppe priority habitats requires additional consideration of biological impacts under the current resource management plan for the North Federal

Campus (DOE/PNSO 2008). Under the specified guidelines for mitigation of impacts to biological resources (DOE 2003), the threshold of areal impacts to mature shrub-steppe that requires mitigation action is 1.24 acre. The area of mature shrub-steppe surveyed for potential clearing during Phase II construction activities is approximately 16.3 acres. The extent of impacts (loss of mature shrub habitat) will require compensatory mitigation according to current DOE guidelines and cannot be avoided. Therefore, the proposed Phase II construction and any additional construction within the proposed action area will require development of a formal mitigation action plan and a mitigation implementation plan to address the biological impacts of loss of priority habitats on federal lands. These mitigation plans will describe the compensatory mitigation required, the timing of individual mitigation actions, and specify the locations and duration of mitigation actions and follow-on monitoring activities.

- To minimize the spread of weeds, avoid wind erosion, and delay impacts to biological resources, those areas where construction activities are not scheduled to begin in 2013 should not be cleared or graded ahead of the year of scheduled construction. Construction activities scheduled after 2013 should be planned so that grading and clearing of habitat on the site is completed outside the migratory bird nesting season (approximately March 1 through July 31).

- Assuming compliance with the above recommendations and considerations, no adverse impacts to protected species, priority habitats, or other biological resources of concern are expected to result from the proposed action.

This Ecological Compliance Review is valid until March 1, 2014. If construction, clearing and grading work is not complete by this date, please contact J.L. Downs (371-7169) for consultation and extension of this review. In addition, please contact J.L. Downs or J.A. Stegen before each biological season (generally March 1 through July 31) for biological survey and review if ground-disturbing activities, clearing of vegetation, off-road driving or related activities within the surveyed Phase II footprint are planned in future years.

Sincerely,

Janelle L Downs
Pacific Northwest National Laboratory
Ecology Group

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REFERENCES

50 CFR 17.11. Code of Federal Regulations, Title 50, Wildlife and Fisheries, Part 17, "Wildlife and Fisheries," Subpart 11, Endangered and Threatened Wildlife.

50 CFR 17.12. Code of Federal Regulations, Title 50, *Wildlife and Fisheries*, Part 17, "Wildlife and Fisheries," Subpart 11, Endangered and Threatened Plants.

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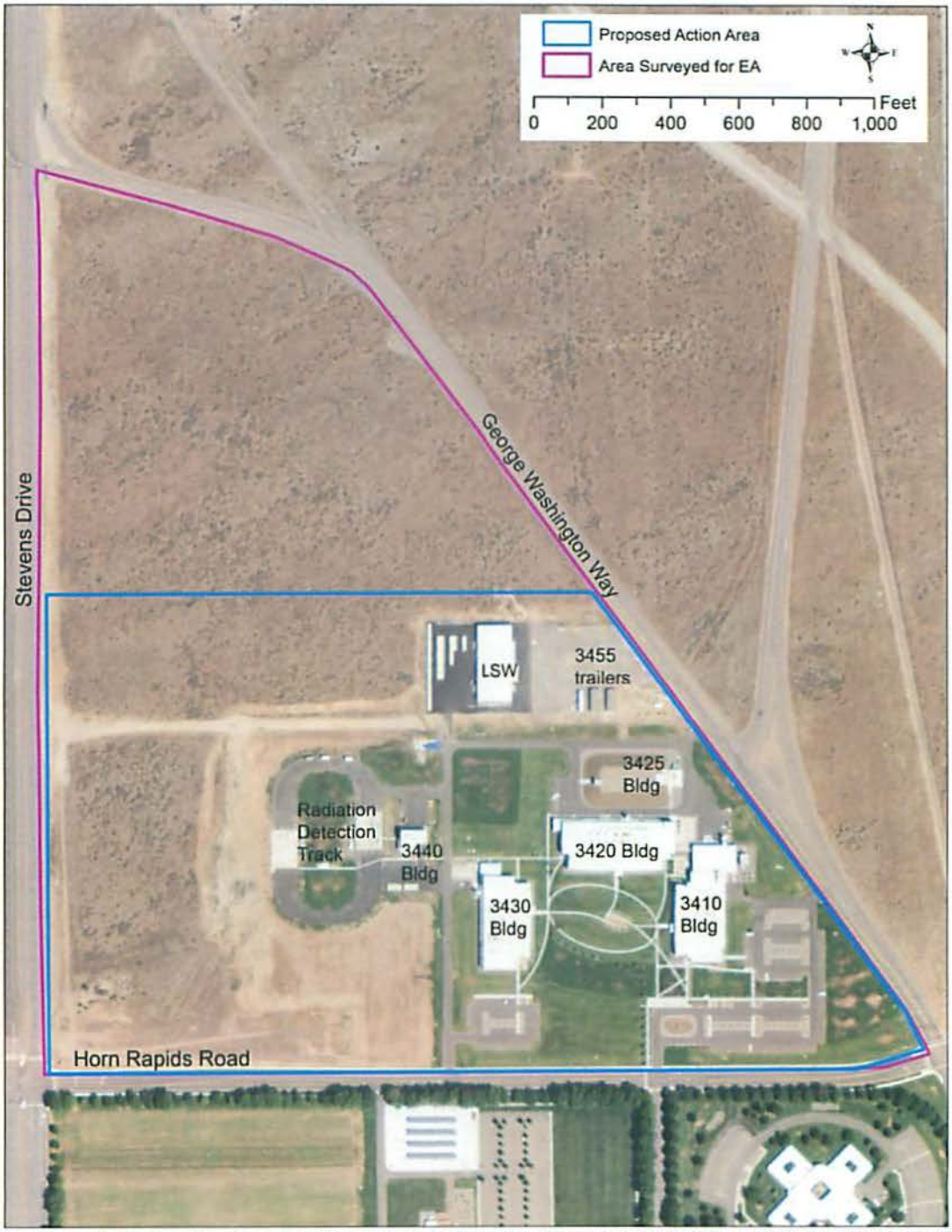


Figure 1. Proposed Action Area for Phase II Construction of New Buildings/Infrastructure (ECR 2013-PNSO-001).

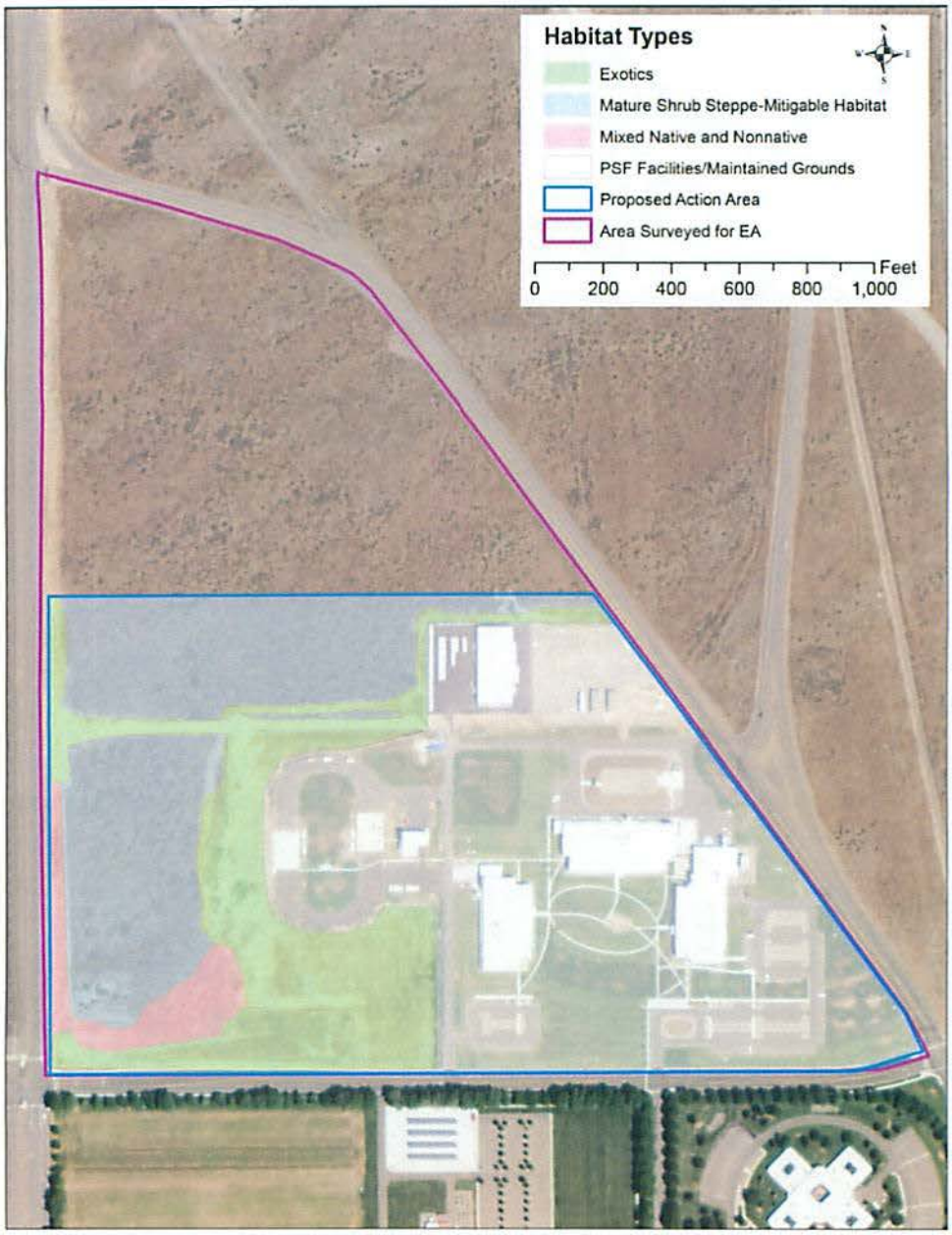


Figure 2. Identification of Habitat Types Found Within the Area Surveyed for Phase II Construction Activities (ECR 2013-PNSO-001).

Appendix B – Mitigation Action Plan for Phase II Build Out, North Federal Campus, PNNL Site, Richland Washington

Mitigation Action Plan for Phase II Build Out, North Federal Campus, PNNL Site, Richland Washington

May 2013

1.0 Introduction

In January 2007, the Final Environmental Assessment of Construction and Operation of a Physical Sciences Facility at the Pacific Northwest National Laboratory (PNNL), Richland, Washington (DOE/EA-1562), the U.S. Department of Energy (DOE) determined that the construction and operation of the Physical Sciences Facility (PSF), within the PNNL North Federal Campus in Benton County, would not result in significant impacts to the environment and recorded a Finding of No Significant Impact (FONSI) for these actions. Since that time, DOE has completed Phase I construction of facilities and now plans to initiate Phase II of the planned 20-year build-out of the area assessed in DOE/EA-1562 (referred to here as the EA) to accommodate existing and anticipated capabilities needed to support the DOE Office of Science mission.

Consistent with the phased build-out approach assessed in the EA, for Phase II, DOE is planning construction and operation of facilities, infrastructure, and associated parking lots for expanded chemical, physical, biological, process science, and computational capabilities to support PNNL's core capabilities within the North Federal Campus. Construction could include expansion of existing facilities as well as construction of new facilities. In addition, Phase II includes infrastructure upgrades needed for the operations of the planned facilities, including installation of new roads and utilities (e.g., water, natural gas, electric, sewer, and communications). Construction of infrastructure is planned to begin in calendar year 2013.

The proposed construction footprint for Phase II facilities and associated infrastructure comprises an area of approximately 68 acres (Figure 1). Currently 36 acres of the action area is covered by PSF facilities/maintained grounds. The other 32 acres of land to the west and north is a mix of native and non-native habitats described below. Construction of the new facilities and associated infrastructure will involve clearing and grading the footprint of the buildings and infrastructure, as well as clearing and grading land areas needed to support construction activities and material laydown during construction.

1.1 Environmental Effects

As determined in the EA (DOE/EA-1562), the Phase I and Phase II construction and operation of facilities on the PNNL North Federal Campus in Benton County, would not result in significant impacts to the environment and mitigation for habitat loss was not required. However, since the EA and FONSI, DOE developed resource management policies for the PNNL Site that include mitigation for loss of priority habitats (DOE/PNSO 2008). Mature shrub-steppe is one of the habitat types classified as a priority habitat within Washington State (WDFW 2008). The proposed project includes plans to clear approximately 16.3 acres of mature shrub-steppe for Phase II construction activities. DOE prepared this mitigation action plan (MAP) to address the loss of priority habitat due to the proposed Phase II construction, and minimize or avoid potential impacts to biological resources.

Under the specified guidelines for mitigation of impacts to biological resources (DOE 2003), the threshold of areal impacts to mature shrub-steppe that requires mitigation action is 1.24 acre, and the extent of the proposed project and resulting loss of mature shrub habitat will require compensatory mitigation according to current DOE guidelines (DOE/PNSO 2008).

Construction activities may occur in the PNNL North Federal Campus area at various times over the next 5-10 years. The migratory bird nesting season begins around March 1 and extends through the end of July, but the locations and types of areas (e.g., shrub habitat or light poles) used by migratory birds for nesting may change from year to year based on species-specific factors and changing site conditions. Construction activities conducted during this period could potentially impact nesting birds. Ground-disturbing activities, such as those associated with the proposed work also present the potential for transporting, spreading, and increasing noxious weed species. Class B noxious weeds were located in previously disturbed portions of the proposed project area.

1.2 Function of the Mitigation Action Plan

This mitigation plan describes the compensatory mitigation and monitoring commitments under DOE resource management guidelines for the clearing and grading, and subsequent loss of mature shrub-steppe habitat associated with Phase II build out activities on the PNNL Site, within the North Federal Campus. The purpose of this MAP is to specify the mitigation requirements, outline the methods that DOE will implement to accomplish the mitigation actions, and define the metrics by which the success or failure of the mitigation measures will be monitored. The commitments made in this MAP are designed to mitigate for loss of the areal extent of the priority habitat by replacement of the lost habitat value, reduce or eliminate the potential spread of noxious weeds, and avoid potential impacts to nesting migratory birds.

1.3 Mitigation Action Plan Annual Reporting

The mitigation measures outlined as commitments in this MAP include implementation and monitoring. Beginning in the year following the initiation of site clearing and grading for Phase II construction activities and infrastructure development, the status, endpoints, and effectiveness metrics for implementation of mitigation and/or monitoring activities undertaken for this project will be included in the Annual Environmental Report for the PNNL Site.

2.0 Mitigation Actions

Proposed construction of new facilities and infrastructure on the PNNL Site is anticipated to result in removal of approximately 16.3 acres (about 6.6 hectares) of mature sagebrush steppe habitat on the North Federal Campus of the PNNL Site occupying the area between George Washington Way and Stevens Drive that is bounded on the southern edge by Horn Rapids Road on the PNNL Site. The shrub-steppe stand is classed as a high priority habitat by the Washington Department of Fish and Wildlife (WDFW 2008) and is identified as a valued biological resource. Under current guidelines for the management of cultural and biological resources on the PNNL Site (DOE/PNSO 2008), impacts to biological resources are to be avoided or mitigated (DOE 2003). Potential environmental effects of the proposed Phase II build out activities and the mitigation actions planned to avoid and minimize impacts to biological resources are summarized in Table 1.

2.1 Compensatory Mitigation Actions

As noted above, the construction of Phase II facilities and infrastructure is expected to result in the loss of approximately 16.3 acres of mature shrub steppe habitat. The nature of the Phase II build out activities (clearing, grading, construction of new facilities and infrastructure) is such that loss of shrub-steppe habitat within the project area cannot be avoided or rectified and, thus, will require compensatory mitigation which is briefly described here.

DOE/PNSO will implement compensatory mitigation for the loss of mature shrub-steppe classified as a priority habitat such that shrub steppe habitat is replaced or recreated at a ratio of 3 to 1; that is, for each unit of shrub-steppe lost, 3 units of shrub steppe will be replaced through one of several methods to develop habitat that meets the criteria for mature shrub steppe stands (required shrub densities and condition of the herbaceous understory). A replacement unit for late-successional sagebrush steppe can be developed using the following approaches:

- Transplanting 20 large shrubs/ha (8/acre) in areas with native herbaceous understory
- Planting 1000 shrub seedlings/ha (400/acre)
- Seeding native herbaceous plants if needed to develop a native herbaceous understory

Based on the current survey extent for Phase II construction activities, the loss of 6.6 hectares of mature shrub steppe habitat requires compensatory mitigation to replace 19.8 hectares (48.9 acres) of shrub steppe habitat.

Compensatory mitigation actions will be located and implemented such that the mitigation actions occur on sites that achieve in-kind habitat replacement and that are not expected to be disturbed or destroyed by any future anthropomorphic activities. Siting criteria for mitigation actions (DOE 2003) are as follows.

1. The mitigation area should be contained either wholly within DOE-administered or managed lands or on the Hanford Reach National Monument.

2. The mitigation area should be located near, within, and/or surrounding lands that possess significant habitat value

3. The mitigation area should include lands that will allow for in-kind replacement of habitat value lost.

4. The mitigation area should be placed in regions designated as conservation or preservation lands.

The criteria set by DOE (2003) were designed to achieve no net loss of in-kind habitat value and produce a net increase in the acreage of in-kind habitat protected from future development. Sufficient land area for in-kind mitigation is not available on the PNNL Site—approximately 7 acres to the east of the proposed Phase II build out were identified where shrub transplants, native plant seeding and installation could be implemented to develop a net increase in habitat value. Other potential areas where mitigation actions could result in net increases in habitat value include lands on the Hanford Reach National Monument or on nearby federal or state-owned lands that are managed for natural resource values. Conduct of compensatory mitigation on lands other than the Hanford Reach National Monument or outside of lands owned and managed by DOE would require that protection provisions, such as deed restrictions or conservation easements, be included as part of the land use agreements.

DOE will identify the most suitable nearby locations for compensatory mitigation actions within Benton or Franklin County.

Table 1 Summary of Mitigation and Avoidance Measures

Environmental Resource	Mitigation Measure	Responsible Organization
Priority Habitat	Conduct compensatory mitigation to replace and restore shrub-steppe habitat at a ratio of 3 replacement acres for every 1acre of habitat destroyed. Develop an implementation plan and schedule as part of project planning and identify location(s) of compensatory mitigation.	DOE and PNNL.
Wildlife	Conduct biological surveys as needed before and during the project to identify potential impacts to wildlife, and specifically to migratory birds. Schedule ground disturbing activities to occur outside the nesting season to the extent feasible. Project staff will work with PNNL biologists to avoid any impacts to migratory nesting birds.	DOE and PNNL
Noxious Weeds	Avoid and minimize the spread of noxious weeds and non-native invasive species by minimizing off-road travel to avoid the spread of seeds. Construction equipment used to clear areas where noxious weeds are known to exist will be inspected and cleaned as necessary to prevent transport of seeds. Revegetation seeding will be reviewed by biologists to assure that seed mixes do not contain noxious weeds or other non-native invasive species that could potentially escape into native habitats.	PNNL Subcontractor

Appendix C – Cultural Resources Assessment for the Land Area Proposed for Phase II Construction and Operation of Research Buildings and Supporting Infrastructure in the North Federal Campus, Pacific Northwest National Laboratory Site

HCRC#2013-PNSO-001

Cultural Resources Assessment for the Land Area Proposed for Phase II Construction and Operation of Research Buildings and Supporting Infrastructure in the North Federal Campus, Pacific Northwest National Laboratory Site

DATE: April 22, 2013

Introduction

This cultural resources assessment was conducted in accordance with the National Historic Preservation Act, as amended and implementing regulations 36 CFR Part 800.

Project Location

USGS Quadrangle: Richland, WA 7.5'
Township: 10 N Range: 28 E
Sections: 14, 15

Project Description

This project proposes to continue to develop the Pacific Northwest National Laboratory (PNNL) campus, north of Horn Rapids Road, to accommodate existing and anticipated capabilities needed to support the U.S. Department of Energy (DOE) Office of Science mission. The development of this area for PNNL capabilities was originally addressed in *Cultural Resources Review of PNNL Capability Replacement Laboratories Construction Site (HCRC #2003-300-013)* (Prendergast-Kennedy 2004). The cultural resource review analyzed construction of multiple module facilities (the Physical Sciences Facility [PSF] complex), over a period of 20 years, within the 40.5 hectare (100 acre) Area of Potential Effect (APE). Phase I of construction included construction of six facilities within the APE and was completed in 2010.

This review addresses the areas, within the APE on the PNNL Site (Figure 1), where construction of new buildings and infrastructure is planned (Phase II). For Phase II DOE is planning construction and operation of facilities, infrastructure and associated parking lots for expanded chemical, physical, biological, process science, and computational capabilities to support PNNL's core capabilities within the North Federal Campus. Construction could include expansion of existing facilities as well as construction of new facilities. In addition, Phase II includes infrastructure upgrades needed for the operations of the planned facilities, including installation of new roads and utilities (e.g., water, natural gas, electric, sewer, and communications). Construction of infrastructure is planned to begin in calendar year 2013.

Construction and expansion of facilities and associated infrastructure will involve clearing and grading the footprint of the buildings and associated infrastructure and clearing and grading land areas needed to support construction activities and material lay down during construction. All project-related activities will take place within the project location shown in Figure 1.

Location

The project is located in the PNNL Site; east of Stevens Drive and north of Horn Rapids Road. The proposed construction footprint for Phase II facilities and associated infrastructure comprises an area of approximately 28.27 hectares (69.85 acres). Construction of the new facilities and associated infrastructure will involve clearing and grading the footprint of the buildings and infrastructure, as well as clearing and grading land areas needed to support construction activities and material laydown during construction. Installation/construction activities will

be conducted in accordance with all applicable codes and standards. All portions of the project will be conducted within the APE as defined by HCRC#2003-300-013.

Findings

Impacts to historic properties were previously considered in HCRC #2003-300-013, conducted by PNNL in 2003 (Prendergast-Kennedy 2004). The project description for that review included construction of new laboratory facilities in a triangular parcel north of Horn Rapids Road. The approximately 40.5 hectare (100 acre) APE fully encompasses the current project area. It was determined that the undertaking would result in the destruction of the portion of the Richland Irrigation Canal within the APE, resulting in an adverse effect on 45BN1125. A Memorandum of Agreement (MOA) was created to resolve adverse effects. Mitigation was completed in accordance with the MOA (Prendergast-Kennedy 2004).

Conclusion

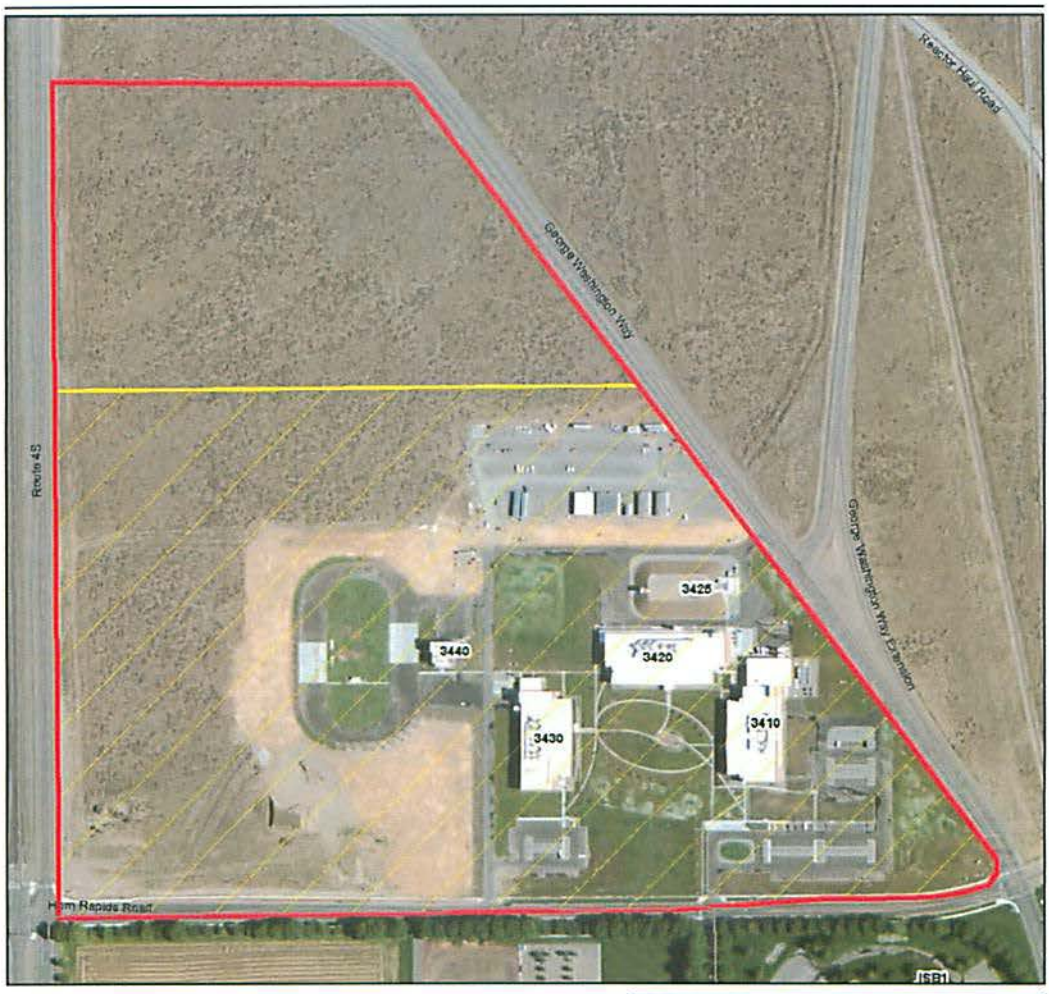
The current project as defined is an undertaking per Part 36 of the Code of Federal Regulations 800. 16(y), and is the type of activity that has the potential to cause effects to historic properties. Based on the findings of the Section 106 review listed above, all Section 106 requirements have been met for this undertaking. Potential impacts to historic properties have been considered by previous a review. This review determined that project activities will have an adverse effect on one historic property, the Richland Irrigation Canal (45BN1125). An MOA was created to resolve adverse effects and mitigation was completed in accordance with the MOA (Prendergast-Kennedy 2004).

This cultural resources assessment was prepared by Stacie Sexton and approved by Keith Mendez, M.A., who meets the Secretary of Interior's Standards for Professional Archaeologists.

References

Prendergast-Kennedy, Ellen

2004 *Cultural Resources Review of PNNL Capability Replacement Laboratories Construction Site. HCRC#2003-300-013.* Pacific Northwest National Laboratory, Richland, Washington.



Legend

- Project Location
- HCRC# 2003-300-013 APE

Richland, WA 7.5' USGS Quads
Township 10 N Range 28 E
Sections 14 & 15

N

0 50 100 200 300 400 Meters

NOTES: Aerial Image, 2011, NAIP.

FIGURE 1
HCRC#2003-300-013 APE
HCRC#2013-PNSO-001 | North Federal Campus Phase II
Benton County, WA