

**Categorical Exclusion for Construction of The EMSL Quiet Wing, Pacific
Northwest National Laboratory,
Richland, Washington**

Proposed Action:

The U.S. Department of Energy (DOE) Pacific Northwest Site Office (PNSO) proposes to construct an addition to the Environmental Molecular Sciences Laboratory (EMSL) to provide space for new high-performance scientific instrumentation that requires specific temperature, vibration, acoustical, and electromagnetic requirements.

Location of Action:

On the southwest corner of EMSL, located in Richland, Washington.

Description of the Proposed Action:

This project would construct an approximately 8000-10,000-square-foot facility (the Quiet or Q wing) loosely attached to the existing EMSL facility, which would provide the space and specialized environment to allow the optimization of new instrumentation, including a high-resolution transmission electron microscope. In addition, relocating several of EMSL's existing instruments to the Q Wing (scanning probe microscopes, helium ion microscopes) is expected to result in greater functionality. Using these research instruments in this controlled space is expected to enable a detailed understanding of new levels of complexity in natural materials as well as the ability to design and synthesize manmade materials with increasing precision and in great detail down to the scale of nanometers and angstroms.

The Q Wing would house instruments that require extremely low electromagnetic field and vibrational interference as well as very stable temperature and humidity control, which is outside of the operations envelope at EMSL. Within the instrument rooms, the temperature would be maintained within the range of 18°C to 23°C (temperature drift: 0.1°C/30 minutes, 0.2°C/60 minutes, fluctuations: 0.05°C); at 20°C, the relative humidity would be maintained at <80%; acoustic noise would be maintained as low as possible, 15/30 dB or less; mechanical vibration and magnetic fields would meet or exceed the published requirements for the FEI Titan electron microscope; cleanliness would be maintained by using class 100,000 (ISO 8) central air handling unit supply air prefilters with a Class 10,000 (ISO 7) or better supply-air final filters and a minimum of six air changes per hour when occupied.

To maintain these strict tolerances, a number of unique design features would be used, including a multi-part, deep foundation system, 12-inch-thick concrete masonry walls, interior walls that are independent of the outer walls, noise breaks in hallways, acoustical panels both inside and outside the instrument laboratories, and minimal use of ferrous metal. Hot water and chilled water would be provided by the existing EMSL systems; no floor drains would be necessary in the research portion of the facility.

Construction of the Q Wing at the southwest end of EMSL would require the relocation of a sewer discharge line and a stormwater infiltration bed designed to accept rainfall from the conference room roof. These features would be routed to the west of EMSL, and a new infiltration bed for rainfall from the Q Wing would also be installed nearby.

This categorical exclusion (CX) would also include those actions foreseeably necessary to the proposal, such as awarding grants and contracts, providing for materials and waste management, and installing research instruments.

Cultural Resources Review: The EMSL facility is not eligible for historic status, and the surrounding site has been extensively disturbed during facility construction in the 1990s. Work conducted under this CX would not adversely affect sensitive cultural resources. Please refer to the attached cultural resource review.

Ecological Resources Review: The EMSL site consists of lawn and landscaping, and it is not likely that the proposed action would adversely affect native plant and animal species in the vicinity. Work conducted under this CX would not adversely affect sensitive native ecological resources. Please refer to the attached ecological resource review.

Categorical Exclusion to Be Applied:

As the proposed action is to construct an addition to the EMSL facility (the Q Wing would be less than 5% of the total square footage of EMSL), the following CX, as listed in the DOE National Environmental Policy Act (NEPA) implementing procedures, 10 CFR 1021, would apply:

B1.15 Siting, construction (or modification), and operation of support buildings and support structures (including, but not limited to, trailers and prefabricated buildings) within or contiguous to an already developed area (where active utilities and currently used roads are readily accessible). Covered support buildings and structures include those for office purposes; parking; cafeteria services; education and training; visitor reception; computer and data processing services; employee health services or recreation activities; routine maintenance activities; storage of supplies and equipment for administrative services and routine maintenance activities; security (including security posts); fire protection; and similar support purposes, but excluding facilities for waste storage activities, except as provided in other parts of this appendix.

Eligibility Criteria:

The proposed activity meets the eligibility criteria of 10 CFR 1021.410(b) because the proposed action does not have any extraordinary circumstances that might affect the significance of the environmental effects, is not directly connected [40 CFR 1508.25(a)(1)] to other actions with potentially significant impacts, is not directly related to other proposed actions with cumulatively significant impacts [40 CFR 1508.25(a)(2)], and is not an interim action precluded by 10 CFR 1021.211.

The “Integral Elements” of 10 CFR 1021 are satisfied as discussed below:

INTEGRAL ELEMENTS, 10 CFR 1021, SUBPART D, APPENDIX B (1)-(4)	
WOULD THE PROPOSED ACTION:	EVALUATION:
Threaten a violation of applicable statutory, regulatory, or permit requirements for environment, safety, and health?	The proposed action would not threaten a violation of regulations or DOE or executive orders.
Require siting and construction or major expansion of waste storage, disposal, recovery, or treatment facilities?	No waste management facilities would be constructed under this CX. Any wastes would be managed in accordance with applicable regulations.
Disturb hazardous substances, pollutants, or contaminants that preexist in the environment such that there would be uncontrolled or unpermitted releases?	No preexisting hazardous substances, pollutants, or contaminants would be disturbed in a manner that results in uncontrolled or unpermitted releases.
Adversely affect environmentally sensitive resources, including, but not limited, to: <ul style="list-style-type: none"> • protected historical/archaeological resources • protected biological resources and habitat • jurisdictional wetlands, 100-year floodplains • Federal- or state-designated parks, wilderness areas, wildlife refuges, or monuments. 	<p>The proposed action would not disturb environmentally sensitive resources. Refer to the “Description of the Proposed Action.”</p> <p>The proposed action would not adversely affect floodplains, wetlands regulated under the Clean Water Act, national monuments or other specially designated areas, prime agricultural lands, or special sources of water.</p>

Checklist Summarizing Environmental Impacts: The following checklist summarizes environmental impacts that were considered when preparing this CX determination. Answers to relevant questions are explained in detail in the text following the checklist.

Would the proposed action:		YES	NO
1	Result in more than minimal air impacts?		X
2	Increase offsite radiation dose measurably?		X
3	Require a radiological work permit?		X
4	Cause more than a minor or temporary increase in noise level?		X
5	Discharge any liquids to the environment?	X	
6	Require a Spill Prevention Control and Countermeasures plan?		X
7	Require an excavation permit (e.g., for test pits, wells, utility installation)?	X	
8	Disturb an undeveloped area?		X
9	Use carcinogens, hazardous, or toxic chemicals/materials?	X	
10	Involve hazardous, radioactive, polychlorinated biphenyl, or asbestos waste?	X	
11	Require environmental permits?		X

Explanations:

- 5. Construction of the Q Wing would include installing a stormwater infiltration system that would be located to the west of EMSL. The Q Wing would be connected to the City of Richland sanitary sewer system under an existing Industrial Wastewater Discharge Permit for EMSL, but the Q Wing is expected to have minimal process wastewater discharges.
- 7. Construction of the Q Wing would require excavation, both to site the foundation and to relocate water lines and stormwater infiltration beds. A Pacific Northwest National Laboratory excavation permit would be obtained to make sure that subsurface structures are identified.
- 9. Construction activities are expected to use hazardous chemicals or materials, such as paints, solvents, sealants, etc. These materials would be managed appropriately through re-use/recycling, or disposal as necessary.
- 10. Proposed construction activities would result in small quantities of hazardous wastes. If unrecyclable, such wastes would be characterized, handled, packaged, transported, stored, and/or disposed of in existing treatment, storage, and disposal facilities in accordance with applicable regulations.

Compliance Action:

I have determined that the proposed action satisfies the DOE NEPA eligibility criteria and integral elements, does not pose extraordinary circumstances, and meets the requirements for the CX referenced above. Therefore, using the authority delegated to me by DOE Order 451.1B, Change 1, I have determined that the proposed action may be categorically excluded from further NEPA review and documentation.

Signature:  Date: 7-2-10
 Julie K. Erickson
 PNSO NEPA Compliance Officer

cc:
 K. R. Ensign, PNNL
 R. S. Weeks, PNNL

CULTURAL RESOURCE REVIEW OF THE EMSL QUIET WING CONSTRUCTION PROJECT 2010-PNSO-002

This cultural resources assessment is conducted in accordance with the “No Potential to Cause Effects” provision [36CFR800.3(a)(1)] of the Advisory Council’s implementing regulations for the National Historic Preservation Act. Do you concur that this project is the type of activity that has no potential to cause effects to historic properties?

Project Name

Environmental Molecular Sciences Laboratory (EMSL) expansion, PNNL Site, Benton County, Washington, HCRC# 2010-PNSO-002

Federal Project Director

Russ Warren

Project Description

DOE-PNSO proposes to construct an addition on the southwest corner of the Environmental Molecular Sciences Laboratory (EMSL), located on the PNNL Site in Richland Washington. The addition would be about 8000 square feet and will measure roughly 32 feet above grade at its highest point. The building consists of a single story high bay with attached laboratory, mechanical and electrical space. The area was previously recontoured during construction of EMSL in the 1990s and is currently in landscaping, sidewalks and lawn.

Construction of the addition will require the relocation of a sewer discharge line and an infiltration bed designed to accept rainfall from the nearby EMSL conference room roof. These features will be routed to the west of EMSL and a new infiltration bed for rainfall on the addition will also be installed nearby. The installation of these infiltration beds will also require rerouting and installing the associated storm drain piping systems.

Other ground disturbance will include sewer line reroutes around the new addition and other utility tie-ins for power and sewer to an existing manhole near the EMSL building.

Construction is expected to begin December 2010 and is estimated to take less than one year.

Area of Potential Effect (APE)

The Area of Potential Effect (APE) for the project will include the footprint needed for the EMSL addition, which has been estimated at 8,000 square feet. The excavation for the addition is estimated at around 5 to 6 feet, but this is dependent on the final design requirements. In addition, the APE will also include the two infiltration beds which in total will measure approximately 50 feet by 100 feet. The excavation for the installation of the infiltration beds is estimated at 5-6 feet deep and will be located on the south and west side of the new addition. Lastly, the project will require the installation/rerouting of several utilities, including storm drains, sewer reroutes and electrical utilities. The 4” sewer piping (both gravity and pressure fed) will require excavation of two lines, one approximately 150 feet and one approximately 350 feet from an existing manhole at the southwest corner of the EMSL building to the new addition. Both will require excavations at a depth of approximately 6 feet. An electrical tie-in from the EMSL building to the new addition will also need to be installed. This tie-in is estimated at a length of (approximately) 250 feet and will require the excavation of 3 foot deep trench for installation. Additionally, the project will also install two sets of 8” storm drains that will feed into the new infiltration beds.

Literature Review

A literature review was conducted at PNNL by Jennifer Gutzeit of the cultural resources project on June 10, 2010. A review of the GIS shape files, aerial photographs and project files pertaining to the project area revealed the following:

- Satellite images of the area proposed for the EMSL expansion show that the area lies in an area of moderate ground disturbance. The areas proposed for the new addition and infiltration beds sit adjacent to the existing EMSL building. The area now contains landscaped lawns and various cement walkways. Areas that have witnessed this degree of ground disturbance have a low potential to contain cultural resources.
- The area selected for the EMSL building expansion has been examined for cultural resources by two previous survey efforts:
 - HCRC# 90-300-025
 - This survey examined the southern portion of what is now the EMSL building. This survey was conducted because of the potential use for the construction of EMSL. Both surface and subsurface surveys methods were used.
 - No cultural resources were located within the area.
 - HCRC# 94-3000-002 (Cultural Resources Investigation of Site 6)
 - This survey examined the northern portion of what is now the EMSL building. The survey was performed for the construction of the building (site 6).
 - Cultural resource investigations for the building site of the EMSL building included: field survey, subsurface excavation, soil conductivity tests and the use of ground penetrating radar. Subsurface testing at geophysical boreholes was performed in addition to the excavation of subsurface anomalies identified during the remote sensing survey of selected areas.
 - Only one archaeological site was recorded during this survey effort, 45BN644, a prehistoric short term activity area. The site remains unevaluated for listing on the National Register of Historic Places and sits approximately 430 meters northwest of the project area.
 - It was determined that project related activities would occur at an acceptable distance away that no impact to these resources would occur.
- Additional cultural resource surveys that have been performed within 500 meters of the project area include:
 - HCRC#89-300-023, HCRC# 89-300-027, HCRC# 97-1100-003 & HCRC# 2003-300-013.
 - These survey efforts have recorded a total of two historic sites and one prehistoric isolate within 500 meters of the proposed project area. These include:
 - Archaeological isolate 45BN511, a single CCS flake, located approximately 453 meters northeast of the project area.
 - Archaeological site 45BN1363, a historic dump site, located approximately 451 meters north of the project area.
 - Archaeological site 45BN129, a historic trash scatter, located approximately 493 meters northwest of the project area.
 - It was determined that project related activities would occur far enough away that no impact to these resources would occur.
 - In addition, over the past several years, 3 cultural resource reviews have been performed that resulted in determinations of not the type of activity with the potential to cause effects to historic properties in the vicinity of EMSL (NPCE# 2006-PNSO-002, NPCE# 2007-PNSO-001, NPCE# 2007-PNSO-002)

Findings

Satellite images of the area proposed for the EMSL expansion show that the area lies in an area of moderate ground disturbance. The areas proposed for the new addition and infiltration beds sit adjacent to the existing EMSL building. Construction drawings confirm that these areas were disturbed during the construction of EMSL and associated parking area/roadways. The area now contains landscaped lawns and various cement walkways. Areas that have witnessed this degree of ground disturbance have a low potential to contain cultural resources. The entire project area has been surveyed by two previous cultural resource investigations related to the original EMSL construction. These survey efforts did not identify or record any archaeological sites/isolated within the project area. While a number of cultural resources surveys have recorded the presence of four archaeological sites/isolated within 500 meters of the project area, it was determined that activities relating to the EMSL additions/modifications would occur at a far enough distance away that no impact to these resources would occur. Access and staging/laydown was also assessed and it was determined that all support activities will be confined to previously disturbed areas surrounding the EMSL building.

For these reasons, the Cultural Resources Coordinator has determined that this project is **not** the type of undertaking with the potential to cause effects to historic properties.

This request has been reviewed and approved by Ellen Prendergast-Kennedy, who meets the Secretary of the Interior's Standards for Professional Archaeologists.

Thank you,
Jennifer Gutzeit



Pacific Northwest
NATIONAL LABORATORY

Tel: (509) 371-7187
Fax: (509) 371-7160
michael.sackschewsky@pnl.gov

June 8, 2010

Mr. Paul Dotson
Pacific Northwest National Laboratory
P.O. Box 999, MSIN J2-18
Richland, WA 99352

Dear Mr. Dotson:

BIOLOGICAL REVIEW OF THE EMSL QUIET WING CONSTRUCTION PROJECT,
ECR #2010-PNSO-002

Project Description:

- Construct an 8,000 ft² quiet wing, attached to EMSL on the southwest corner. Install two below-grade 50-ft x 100-ft infiltration beds to collect rainwater. Construction will begin in December 2010 and take less than one year to complete.

Survey Objectives:

- Determine the occurrence in the project area 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:

- Pedestrian and visual reconnaissance of the site proposed for the quiet wing addition was performed by K. Hand on June 8, 2010. The percent cover of dominant vegetation was visually estimated. Direct and indirect observations of wildlife were recorded.

- Priority habitats and species of concern are documented in: Washington Department of Fish and Wildlife (2008, 2009), 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 at 50 CFR 17.11 and 50 CFR 17.12; the list of birds protected under the MBTA is maintained at 50 CFR 10.13.

Survey Results:

- The site proposed for the quiet wing addition is maintained as lawn with ornamental trees; no native vegetation exists.
- No wildlife or migratory birds were observed at the proposed site.

Considerations and Recommendations:

- No plant or animal species protected under the ESA, candidates for such protection, or species listed by the Washington state government as threatened or endangered were observed in the vicinity of the proposed project site.
- 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 April 15, 2011.

Sincerely,

Michael R. Sackschewsky

Michael R. Sackschewsky
Compliance Assessment Manager
Ecological Monitoring and Compliance Project

LB:mrs
kdh

REFERENCES

- Washington Department of Fish and Wildlife. 2008. Priority Habitats and Species List. Olympia Washington. 174 pp. Available at: <http://wdfw.wa.gov/hab/phslist.htm>
- Washington Department of Fish and Wildlife. 2009. Species of Special Concern in Washington. Accessed 6-8-2010: <http://wdfw.wa.gov/wlm/diversty/soc/soc.htm>
- Washington Department of Natural Resources. 2009. Washington Natural Heritage Information System Plant Ranks. Accessed 6-8-2010: <http://www1.dnr.wa.gov/nhp/refdesk/lists/watch.html>