Pacific Northwest National Laboratory

Visitor Orientation

Pacific Northwest National Laboratory
Operated by Battelle for the U.S. Department of Energy

Office of Science
U.S. DEPARTMENT OF ENERGY

PNNL-SA-56793

Site-Specific Information

Includes site-specific information, such as facility, emergency, operations contacts, specific security, safety requirements, training pertaining to that site only.

Table of Contents

Rev. 0, 2007

Welcome to the

Pacific Northwest National Laboratory

The safety and health of our employees, the public, and those who visit the Pacific Northwest National Laboratory (PNNL), in addition to protecting our environment, are fundamental values of the U.S. Department of Energy (DOE) and its contractors. PNNL is operated by Battelle for DOE. At the Laboratory, we value human life above all else and strive to provide a workplace free of occupational injuries and illnesses. We value the environment and protect it, the public, and future generations from unacceptable risks resulting from its operations. We are dedicated to impeding unwanted events by preventing unsafe acts, eliminating or mitigating unsafe conditions, and responding properly to near misses and emergency situations. Our goal is to make sure that all visitors to the Pacific Northwest National Laboratory will go home in the same condition as when they arrived.

Environmental Stewardship

We are committed to providing a safe and healthy working environment for all staff; protecting the general public and the environment from unacceptable environmental, safety and health risks; and operating in a manner that protects and restores the environment. The Pacific Northwest National Laboratory is registered to the ISO 14001:2004 Standard for Environmental Management Systems. We are classified by the state of Washington as a Large Quantity Generator of hazardous waste, hold several environmental permits, and are members of the Environmental Protection Agency's National Environmental Performance Track Program. As such, activities here must meet special requirements that might not apply to other businesses or educational institutions. We need your help to maintain a strong environmental management system and compliance record.

We Take Safety, Security, and Environmental Protection Seriously

As a visitor to the Laboratory, you are expected to work with your host or escort to:

- Identify and manage any hazards and environmental impacts associated with your work. You must receive special permission from your host or escort before bringing any chemicals onsite, disposing of waste (solid, liquid, or gas), or discharging any waste water down drains or to the ground.
- Follow all rules (e.g., contracts, host- or escort-provided requirements/work control procedures, or training).

  Remember, you may put things down the drain or in the trash at home that cannot be disposed of that way at the Laboratory. If in doubt, ask your host or escort.
- Whenever possible, prevent pollution, minimize water and energy use, recycle, and use the least hazardous material to complete the work.
- Communicate with your host or escort if you have ideas on how to perform the work in a more environmentally friendly manner, or if you experience problems implementing applicable requirements.

Safety is a Core Value at PNNL

To achieve our goal of protecting our workers, the public, and the environment, we apply an aggressive approach to integrated safety and security management at the Pacific Northwest National Laboratory. To support this process, visitors are responsible to

- clearly understand the work to be performed
- practice and promote safe behaviors and proper and secure work practices
- use good judgment
- comply with the standards and guidance described in this guide (and as otherwise defined by your host or escort)

- recognize hazards and possible security issues
- provide notification of unsafe work areas, work processes, and potential security issues.

You also have the right to know

- the potential hazards associated with the areas you are visiting
- the measures to be taken to protect you from the dangers these hazards may impose.

Visitor Responsibilities

Visitors have safety and security responsibilities similar to those of our own employees. When you enter the Pacific Northwest National Laboratory facilities, you agree to abide by our policies and procedures and to adhere to the responsibilities described in this booklet.

Conduct only those activities and access only those work areas approved for your visit.

Follow all instructions of your host or escort and request guidance if you have questions. Seek clarification of policies and practices from your host or escort.

Follow all posted signs and rules. Safety, security, and radiological postings are located throughout the Pacific Northwest National Laboratory for your protection.

Do not smoke in any Battelle- or DOE-owned or contractor- leased facility; in any government- or Battelle-owned vehicles; or near flammable gasses, liquids, and dry vegetation. Smoking is permitted outside in designated areas only.

Dispose of litter and cigarettes in the proper receptacle.

Maintain our work environment and equipment in a clean and orderly condition.

Do not bring your pets and animals to the Laboratory except for guide dogs.

Know the location of fire exits and means of egress in and out of the buildings.

Use established walkways and crosswalks in your foot travel, maintaining a personal awareness of tripping and slipping hazards and uneven walking surfaces. Use handrails when accessing stairways.

Do not remove artifacts, disturb wildlife, or pick flowers.

Be alert for deer and other wildlife that may be on the road. Stay on designated roads. Be prepared for changes in road conditions or slow-moving vehicles.

Park in designated parking areas. Handicapped parking permits are required to park in handicapped spaces.

Promptly report to your host or escort any actual or suspected acts of intentional damage, theft, misuse of government property, or security discrepancies that come to your attention.

Security

Except for public access areas, security badges are required in all Pacific Northwest National Laboratory and DOE contractor-leased or government-owned facilities. It is your responsibility to protect your badge and comply with the following:

- Wear your security badge conspicuously above the waist and in plain view on your outermost layer of clothing. Carry photo identification (driver's license, passport, or military identification) with you at all times.
- If you have an "ESCORTED" badge, you must have an escort with you at all times in security areas.
- Return your security badge, prox card, and any keys to your host, escort, or any PNNL access control clerk at the end of your visit or assignment.

Please note that visitors are subject to search at any time.

- Use your badge for official business use only. Protect your badge from loss and misuse. Do not transfer or loan your badge to anyone.
- Immediately notify your host, escort, or the PNNL Single Point of Contact at (509) 375-2400 if you lose or misplace your security badge.
- Do not bring prohibited or controlled items into PNNL or DOE facilities. Prohibited or controlled articles are detailed on page 9.
- Access government computers only after you have received approval from your host or escort and have completed cyber security training.

Safety

You have the right to enter a safe work environment, and the responsibility to keep it safe!

- Make sure that work is conducted safely.
- When required, wear personal protective equipment.
- Obtain permission from your host or escort to operate any project or facility equipment and machinery. Additional training may be required.
- Inform your escort or host of any medical restrictions or physical limitations that may prevent you from performing your work safely. Immediately report any injury, illness (e.g., dizziness, general feeling of discomfort), potential exposure, spills or non-routine release of hazardous materials to your escort, or request assistance from the nearest employee. If you need additional assistance, call the PNNL Single Point of Contact at (509) 375-2400.

- Make sure any samples or chemicals brought onsite are processed through the applicable Field Safety Representative.
- STOP WORK immediately (or cease what you are doing) when you identify a potential hazard or problem, or when directed to do so by Pacific Northwest National Laboratory personnel.
- Complete special safety training prior to entering any laboratory workspace without an escort or if performing any of the designated hazardous activities listed on pages 10-11.

Emergency

Report emergency or specific event conditions to the PNNL Single Point of Contact immediately by calling (509) 375-2400 or using the nearest Emergency Call Station and pressing the **EMERGENCY** button. An Operations Center Technician will assist you.

Respond to all building and facility alarms as detailed below. Follow instructions of your host, escort, or the facility occupants during an event. A recording of emergency signals, with response instructions, may be heard by dialing (509) 373-2345.

SIGNALS	ACTIONS
CRITICALITY HOWLER AH-OO-GAH	**RAPIDLY EVACUATE**
FIRE GONG or HORN	**EVACUATE GO TO STAGING AREA**
TAKE COVER WAVERING WAVERING SIREN WAVERING TONE for 3-6 min.	**STAY INSIDE**
EVACUATION STEADY STEADY SIREN STEADY BLAST for 3-8 min.	**GO TO STAGING AREA**
HIGH AIRBORNE RADIOACTIVITY RINGING BELL FLASHING RED LIGHT	**EVACUATE RADIATION AREA**

PNNL Operations Center
Single Point of Contact
(509) 375-2400

In the event of an emergency, or during a drill, follow the instruction of your host or escort. If you become separated from your host or escort, seek assistance from the nearest employee.

Facility-specific orientation provides response information related to emergency alarms, location of property emergency exits and location of staging areas. Check with your host or escort to ensure you have the required building emergency information.

In case of an emergency, you must have a pre-designated method to communicate with your host or escort.

Note: Building Emergency Response Organization personnel wear safety identification vests.

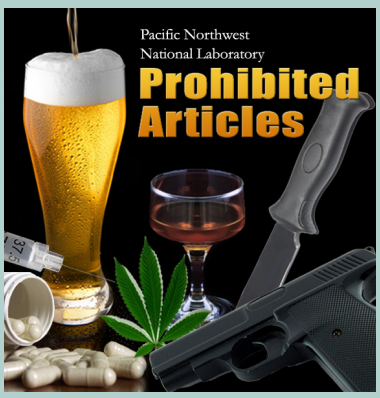
Prohibited Articles

The following items are prohibited within Pacific Northwest National Laboratory facilities or any location under the cognizance of the DOE:

- dangerous weapons or ammunition
- explosives or incendiary devices
- controlled substances (e.g., illegal drugs and associated paraphernalia, but not prescription medication)
- alcoholic beverages (including "near" and "non-alcoholic" beer).

Prohibited knives include fixed or folding knives with blades exceeding 4 inches; knives with blades that are automatically released by spring or mechanical mechanism; knives that open, fall, or are ejected into position by force of gravity; swords, machetes, hatchets, axes, straight razors, and similar cutting devices.

Without prior authorization, the following controlled articles are prohibited within areas that process or control classified matter or quantities of special nuclear material. These limited areas, protected areas, and material access areas have barriers and are clearly identified.



If you are in possession of any prohibited articles, DECLARE THEM NOW!

The controlled articles include:

- radiofrequency transmitting equipment
- cameras
- transmitting or recording equipment
- cellular telephones
- computers and associated media (includes personal electronic devices, e.g., personal digital assistants [PDAs]).

In addition to the items listed, all personal protective sprays (e.g., mace, pepper spray) are prohibited within Protected and Material Access Areas.

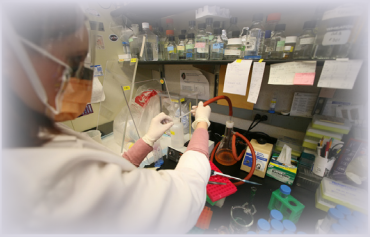
Radiation Safety

Some facilities and areas contain radiological hazards that are invisible and not normally dealt with in everyday life. This section describes the basics of radiological hazards and the protective measures we take to minimize any risk. The DOE, PNNL, and Hanford Site contractors are firmly committed to maintaining a Radiological Control Program of the highest quality.

- Do not bring sealed or unsealed radioactive sources into Pacific Northwest National Laboratory facilities without prior approval of the PNNL Radiological Control organization.
- Do not enter a radiological area or work with any hazardous materials without specific authorization and training. Visitors are limited to observation and auditing activities unless further training is obtained.
- Keep your exposure "As Low As Reasonably Achievable" (ALARA). (See page 12).

Basic Radiation Concepts – What is Radiation?

Radiation is energy that is emitted from an unstable atom. It can be in the form of a particle (alpha, beta, or neutron radiation) or a ray (gamma or X-ray).



Radiation is energy that is emitted from an unstable atom. It can be in the form of a particle (alpha, beta, or neutron radiation) or a ray (gamma or X-ray).

Radiation also can be classified as ionizing or non-ionizing. Ionizing radiation has enough energy to remove electrons from the atoms through which it passes. This section of the booklet covers ionizing radiation. Non-ionizing radiation lacks the energy to remove any electrons from neighboring atoms. Examples of non-ionizing radiation are radiowaves, lasers, and microwaves.

Another term associated with radiation is radioactive contamination. In simple terms, radioactive contamination is having radioactive material in an unwanted location. Radioactive contamination areas are strictly controlled to prevent the spread of contamination.

What About Radiation Exposure?

Everyone is exposed to naturally occurring radiation every day. This exposure is expressed as a dose equivalent. The unit of its measure is called "rem." The vast majority of exposure here is measured in millirem or "mrem," which is 1/1000 of a rem. In the United States, the average person receives a radiation dose of approximately 360 mrem each year from naturally occurring background radiation and manufactured sources.

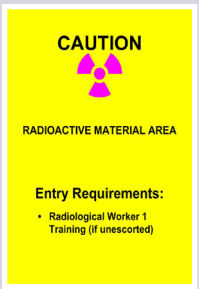
All radiological hazards are easily identifiable by the use of the international sign for radiation—a black or magenta trefoil on a yellow background with the words "Caution" or "Danger." Entry into any of these areas requires specific training and strict compliance with access requirements. Yellow plastic wrapping and designated storage areas for radiological materials are additional controls that are used to warn the worker of the presence of radioactive materials in the area.

How do I Identify Radiological Hazards?

Any area in which there is a potential for exposure above background to radioactive materials is strictly controlled. A combination of special training, administrative controls, and physical controls (including radiological postings, signs, and barriers) is used to restrict access to these areas.

Examples of these areas are:

- fixed contamination areas
- underground radioactive material areas
- radioactive material areas
- radiological areas.



Material Area

Buffer Area

Controlled Area

Radiation Risks

Exposure to ionizing radiation may increase your chances of developing cancer. Although the scientific community lacks consensus on how much exposure is acceptable, current regulations require us to maintain your exposure **As Low As Reasonably Achievable (ALARA).**

Remember that it is difficult to prevent your exposure to naturally occurring sources of radiation exposure. However, you can more easily control your exposure to manufactured sources of radiation.

The following data address the expected effect on the average life span of the large population of individuals subjected to the listed risk factor or behavior. The subsequent average loss of life expectancy is expressed in days.

ALARA

The main ALARA measures are:

- reduce **TIME** near the hazard
- increase the **DISTANCE** from the hazard
- increase the **SHIELDING** between you and the hazard
- reduce the amount of radioactive material (e.g., decontamination).

Chronic exposure occurs when an individual receives a dose of radiation (typically a low dose) over an extended period of time (usually months to years). Exposure to naturally occurring background radiation is an example of chronic exposure.

Acute exposure occurs when an individual receives a high dose of radiation in a short period of time

Health Risk	Estimated Days of Life (Expectancy Lost)
Smoking (1 pack/day)	3500
15% Overweight	777
Alcohol Consumption (U.S. Average)	365
Construction Worker	227
Driving a Motor Vehicle	205
All Industry	60
Radiation Dose of 100 mrem/year (for 70 years)	10
Coffee (U.S. Average)	6

(seconds to days). Firefighters at the Chernobyl plant in the Ukraine received acute doses of radiation.

Heritable effects are passed from one generation to the next. High levels of radiation exposure to animals have been demonstrated to produce such effects. A developing embryo or fetus is more sensitive to environmental factors such as radiation. Possible effects may include slower growth, inhibited mental development, or childhood cancer. However, no heritable effects have been observed in humans as a result of radiation exposure.

Is There a "Safe" Dose of Ionizing Radiation?

The scientific community has not developed a definitive answer to this question. The potential risk of working with or around radioactive materials can be compared to other accepted risks in our everyday lives.

In summary, the estimated risk associated with radiation exposures, when compared to other risks, is considered to be within the normal range of the public's risk tolerance.

How are Radiological Risks Managed?

The key to managing radiological risks is to keep exposures to radiation and other hazardous materials ALARA. The cornerstone of the ALARA philosophy is to not allow any exposure without a commensurate benefit. This is accomplished by evaluating all hazards before operations begin and designing appropriate controls into the project.

What are the Radiological Controls?

Engineered and administrative controls keep radiation exposures ALARA.

Pacific Northwest National Laboratory dosimetry staff provide information to protect nuclear workers against possible health effects from radiation.

Engineered controls are physical or mechanical devices used to reduce the risk from hazards (e.g., radiation, chemical, etc.). Engineered controls are the primary means of controlling radiation exposure. They include:

- shielding
- proper ventilation
- containment devices, such as gloveboxes
- interlocks on enclosures.

Administrative controls are procedures and policies used to minimize the risk from hazards. Administrative controls supplement engineered controls to provide a safer workplace. Administrative controls include:

- warning signs (e.g., radiological postings)
- safety procedures
- radiological work permits.

In addition, administrative control levels are used to keep your annual exposure well below the legal dose limits. Visitors are limited to 100 mrem/year. General employees are expected to receive less than 100 mrem/year. Trained radiological workers are administratively limited to 500 mrem/year.

What About Pregnant Women?

If you are pregnant and have any concerns regarding radiation exposure, talk to your host or escort, who will contact the Radiation Protection organization to discuss radiation effects during pregnancy. Radiological workers who are pregnant are limited to 500 mrem by DOE for the duration of the gestation period. The PNNL limit is 450 mrem per gestation period and no greater than 50 mrem per month.

How do I Protect Myself and Others in the Event of a Radiological Event or Emergency?

Refer to the "Emergency" section (page 8) of this booklet.

What are My Rights and Responsibilities?

Refer to the "Visitor Responsibilities" section (page 5) of this booklet.

Will I Have to Wear a Dosimeter?

A dosimeter is a device used to measure an individual's exposure to external radiation. Typically, most employees do not receive a measurable occupational dose. Radiological workers wear dosimeters to measure their dose. Most likely, you will not be entering areas that require dosimeters to be worn. You will be issued a dosimeter if you will be entering areas where dosimeters are required, or if you have the potential to receive a dose that requires dosimetry.

Dose Reports

Dosimeters must be returned when you finish your visit. Visitors assigned a dosimeter will receive a report 30 to 90 days after their visit. You may request a dose report by calling Dosimetry.

Personnel Surveys

Personnel contamination monitors and hand and foot monitors are located at many exits of facilities on the Hanford Site and Pacific Northwest National Laboratory. You are required to use these monitors upon exiting the radiological area. DO NOT use hand-held portable instruments. If needed, the survey will be performed by a Radiological Control Technician.

Are There any Special Instructions for Wearing and Caring for a Dosimeter?

If you are required to wear a dosimeter, follow these instructions:

- Wear the dosimeter facing out on the upper part of your body, with no obstructions that may shield the dosimeter (including plastic cards).
- Do not wear your dosimeter at facilities other than those at PNNL or the Hanford Site.
- If you have received or will be receiving medical treatments involving radiopharmaceuticals, do not wear the dosimeter. Notify your host or escort, who will in turn notify the Radiation Protection organization.
- Do not expose your dosimeter to excessive heat or moisture.
- If you lose or damage your dosimeter, immediately report the occurrence to the Radiation Protection organization.

General Information

At the Pacific Northwest National Laboratory, we are driven to take on America's most intractable problems in energy, national security, and environmental quality. We advance the frontiers of science and technology by creating new tools for discovery and collaborating across disciplines, the nation, and the world. PNNL is a DOE Office of Science National Laboratory, but we perform work for many DOE offices as well as other government agencies. PNNL facilities are primarily located in north Richland, just south of the Hanford Site's 300 Area.

In addition to the Richland campus, PNNL operates a Marine Sciences Laboratory in Sequim, Washington. It also has offices in other locations including Seattle, Washington; Albuquerque, New Mexico; and Washington, D.C. Battelle, based in Columbus, Ohio, has operated PNNL for the federal government since the Laboratory's inception in 1965.

PNNL Offsite Locations

The PNNL offsite locations are required to follow the same security requirements as the Richland Campus. Security requirements such as badging, escorting and prohibited or controlled articles requirements identified previously in this booklet also apply to the offsite locations.

Sequim

The Sequim Marine Research Operations facility is located at 1529 West Sequim Bay Road, Sequim, Washington 98382. The Laboratory site covers 150 acres of uplands and tidelands; about 7.5 acres of the site are developed.

Seattle

The Battelle Seattle Research Center is a leased facility occupying the third, fourth, and fifth floors of the 1100 Dexter Building, located at 1100 Dexter Ave. North, Suite 400, Seattle, Washington 98109.

Battelle Washington

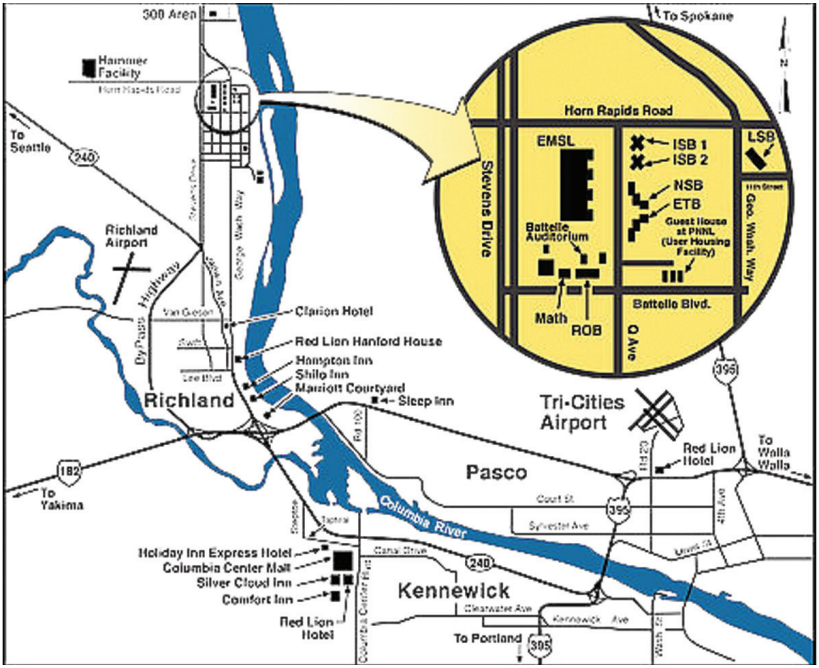
The Battelle Washington Operations office is located in the L'Enfant Office Building, 901 D Street SW, Washington, D.C. 20024. Battelle occupies the entire ninth floor of the building.

Albuquerque

PNNL operates the DOE Polygraph Test Center, located in Suite 202 at 3201 University Boulevard SE, Albuquerque, New Mexico 87106. Contact your host or sponsor for safety information specific to the Albuquerque office.

Refer to the back of this booklet for additional information on each location's staging area and fire protection instructions.

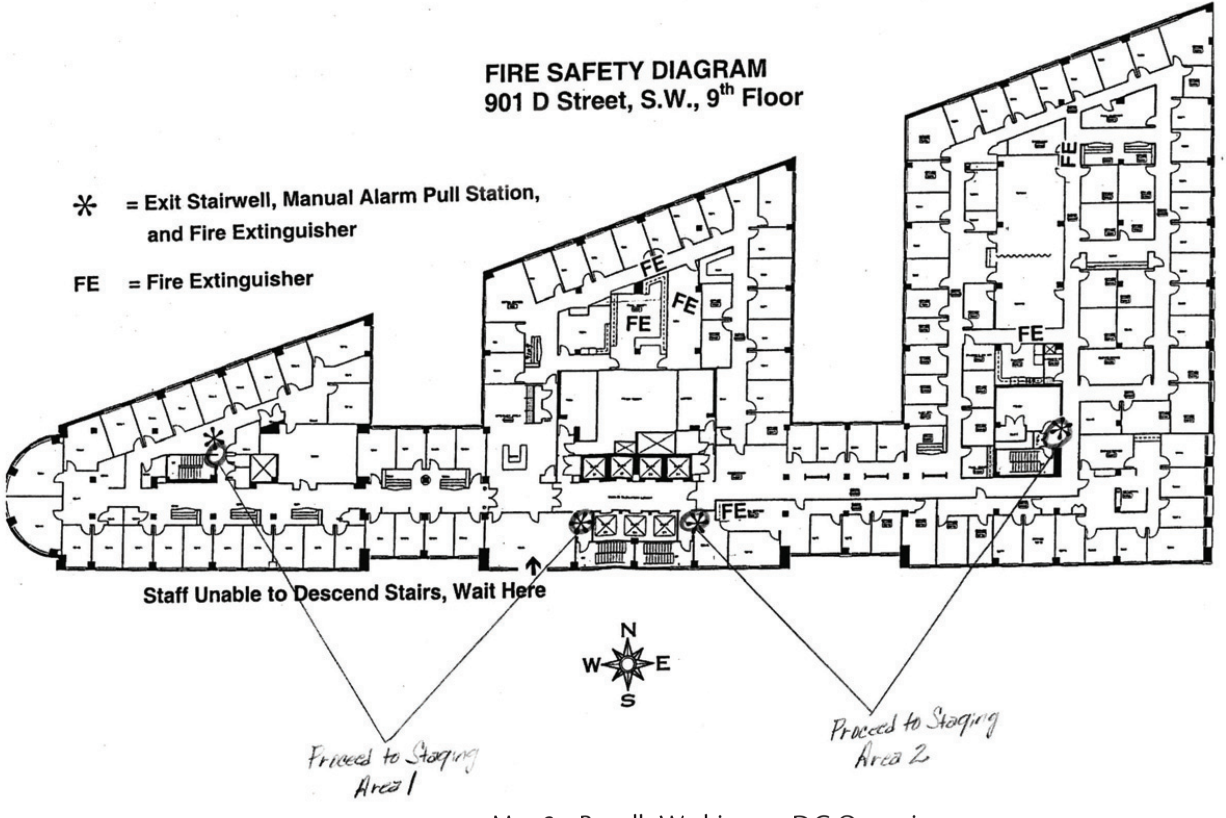
PNNL Richland, Washington Operations Staging Map



Map 1 – PNNL Richland, Washington Operations

Battelle Washington, D.C. Operations Staging Map

Fire Protection – The building has ceiling sprinklers activated by heat sensors. There are a total of ten extinguishers located throughout the suite. In addition, there are two water hose connections on each end of the floor, and nine emergency pulls. The primary entrance/exit to Battelle's suite is via elevator. In case of emergency there are four enclosed stairwells, one on either side of the elevator lobby and one on each end of the floor. The staging area is across the street on the side of L'Enfant Plaza.



Map 2 – Battelle Washington, D.C. Operations

PNNL Seattle, Washington Operations Staging Maps

Fire Protection – A steady vibratone signal means the facility is to be evacuated at once and is an indication of fire. Floor Captains may provide verbal notice if an evacuation is needed for a non-fire emergency.

There are two staging areas: (1) in the parking lot outside of the loading dock, and (2) on Dexter Avenue just north of the building. Refer to the site map in the back of this booklet for the detailed location of the staging areas.

Map 3 – Seattle, Washington Operations

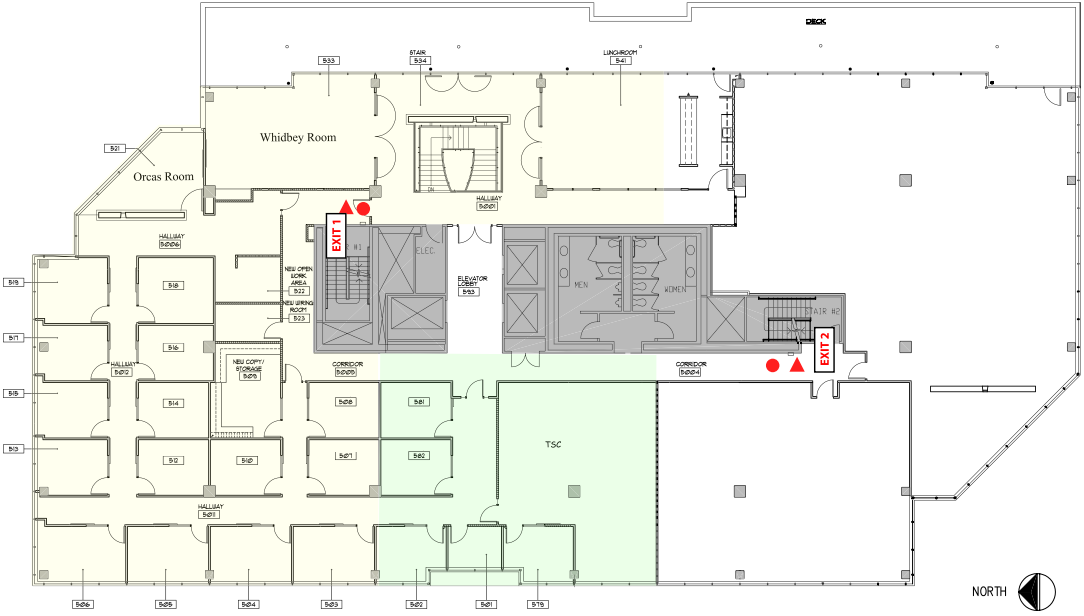
1100 Dexter Building 3rd Floor
Emergency Evacuation Routes

Map 4 – Evacuation Route, Seattle, Washington Operations

1100 Dexter Building 4th Floor
Emergency Evacuation Routes

Map 5 – Evacuation Route, Seattle, Washington Operations

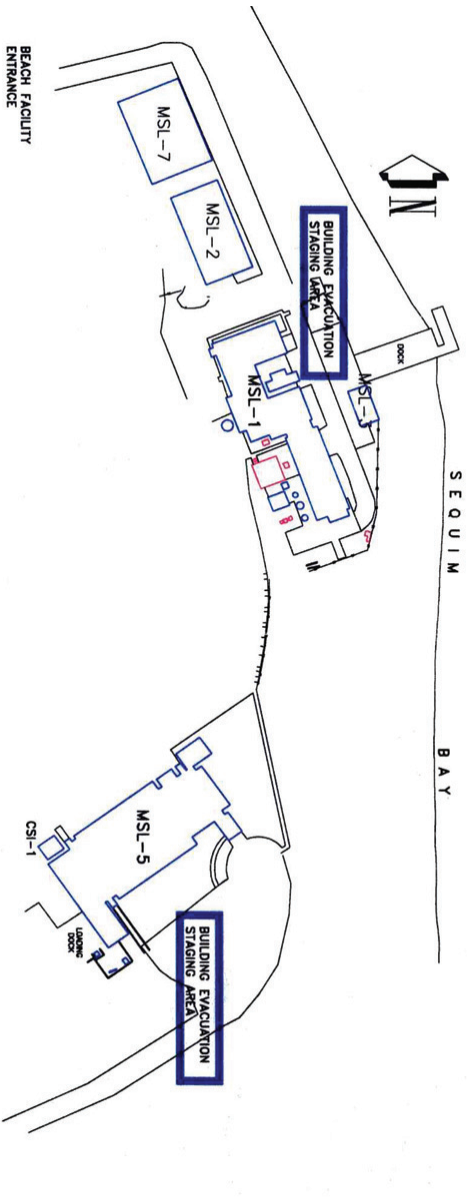
1100 Dexter Building 5th Floor
Emergency Evacuation Routes



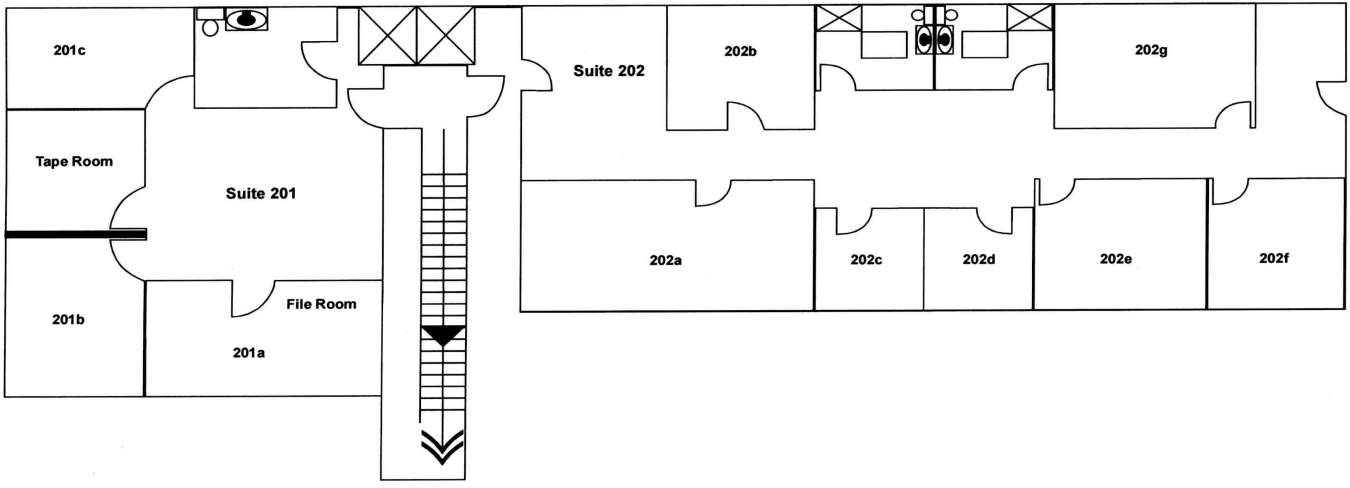
Map 6 – Evacuation Route, Seattle, Washington Operations

Sequim Marine Research Operations, Washington Operations Staging Maps

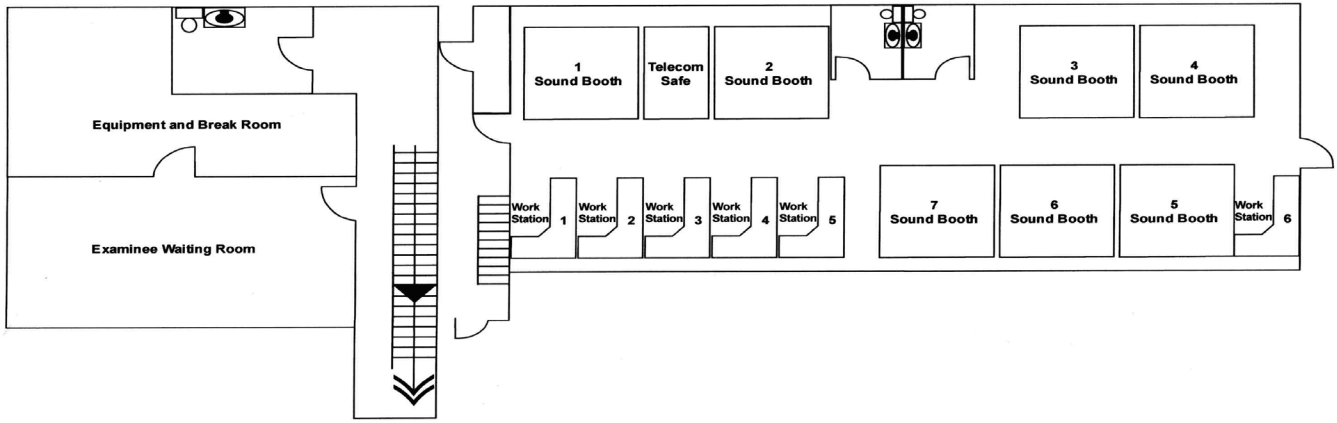
Fire Protection – Fire alarms (steady vibratone noise and light strobes) are located in both the upland and beach facilities. In the event of a fire alarm, evacuate building by nearest exit and report to the staging area.



Map 7 – Sequim, Washington Operations



Map 8 – Sequim, Washington Operations



Map 9 – Sequim, Washington Operations