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INTRODUCTION

The U.S. Department of Energy's Hanford Site, north of Richland, Washington, has a mission of defense production, waste management, environmental restoration, advanced reactor design, and research and development. The site covers an area of 1450 km^2 and is bounded by dry-land and irrigated agricultural activities. Operations at the site occupy only about 4% of the land area, providing a large refuge which is relatively undisturbed.

Environmental programs at Hanford are conducted by Pacific Northwest Laboratory (PNL) and the Westinghouse Hanford Company (WHC). The WHC environmental programs include the compliance and surveillance activities associated with site operations and waste management. The PNL environmental programs address the site-wide and the off-site areas. They include the environmental surveillance and the associated support activities, such as dose calculations, and also the monitoring of environmental conditions to comply with federal and state environmental regulations on wildlife and cultural resources. These are called "independent environmental programs" in that they are conducted completely separate from site operations.

INTEGRATED ENVIRONMENTAL MONITORING

The site-wide and off-site environmental monitoring programs are integrated into the Hanford Environmental Surveillance and Oversight Program. This integrated environmental surveillance program goes beyond the traditional environmental monitoring activities of sampling and analysis. The program focuses on the comprehensive environmental status of the site and activities needed to maintain the credibility of environmental evaluations.

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The Environmental Surveillance and Oversight Program consists of the following projects:

- Surface Environmental Surveillance
- Ground-Water Surveillance
- Wildlife Resources Monitoring
- Cultural Resources
- Dose Overview
- Radiation Standards and Calibrations
- Meteorological and Climatological Services
- Emergency Preparedness.

These projects are located within the PNL line organizations where expertise in the various disciplines is located. The Environmental Surveillance and Oversight Program coordinates these projects into an integrated Hanford environmental program.

SURFACE ENVIRONMENTAL SURVEILLANCE

This project is responsible for measuring and evaluating radiological and selected nonradiological environmental impacts resulting from operations at Hanford. The project is operating in compliance with U.S. Department of Energy (DOE) orders. It includes sample collection, measurement and analysis, and the interpretation and reporting of results in a manner that provides continuity in the documentation of radiological conditions on and around the Hanford Site. The media monitored include air, water, soil, foodstuffs, vegetation, and wildlife.

GROUND-WATER SURVEILLANCE

The objective of the Ground-Water Surveillance Project is to evaluate the existing and potential environmental impacts of Hanford operations that are caused by contaminant migration through the ground-water pathway. These impacts are evaluated through the collection and analysis of ground-water samples, characterization of the ground-water flow system, and modeling of ground-water flow and transport. Both radioactive and hazardous nonradioactive contaminants in the groundwater are monitored. This project provides site-wide monitoring of Hanford groundwater and is separate from the monitoring conducted around active and inactive waste facilities for compliance with the Comprehensive Environmental Response, Compensation, and Liability Act (CERCLA) and the Resource Conservation and Recovery Act (RCRA).

WILDLIFE RESOURCES MONITORING

This project monitors the status of native wildlife species and their habitats, and it distinguishes changes in status caused by site activities from those caused by natural events such as weather, wildfire, or actions and activities originating off-site. Of particular concern are animals and plants that are listed by federal and state agencies as being threatened or endangered. Special attention is paid to conservation of wildlife species of commercial and/or recreational importance and species that can be used as biological indicators of hazardous materials in the surface environment.

CULTURAL RESOURCES

Impacts and potential impacts of site operations on cultural resources at Hanford are evaluated to ensure that these resources are identified, evaluated, and protected in a systematic, documented manner as required by the National Historic Preservation Act and the Archaeological Resources Protection Act. Cultural resource reviews are conducted whenever a Hanford Site activity will significantly disturb the surface of the ground. The project also provides DOE Richland Operations Office (DOE-RL) with information it needs to interact with federal, state, and tribal agencies on cultural resource issues and, thereby to maintain a positive working relationship with Indian tribes and bands concerned about the cultural heritage of the Hanford Site.

DOSE OVERVIEW

Environmental radiation dose evaluations are required by DOE to be performed whenever potential environmental exposures exist on or around DOE sites. At Hanford, dose evaluations are typically performed by the individual Hanford contractors for a variety of situations. This project coordinates the activities of the Hanford Dose Overview Panel, which consists of representatives from the Hanford contractors to assure that all environmental dose calculations performed at Hanford are conducted in a technically correct and consistent manner. Dose codes are also developed using established International Commission on Radiological Protection (ICRP) methodologies and reviews, the input parameters ensuring that the most recent information is used.

RADIATION STANDARDS AND CALIBRATION

This project is responsible for ensuring that state-of-the-art calibration methods are used for personnel monitoring equipment, including personnel dosimeters and instrumentation, and for ensuring that those methods are traceable to the National Institute of Standards and Technology. The project provides the following:

- development, maintenance, and calibration of beta, photon, and neutron irradiators
- development and maintenance of data-management system to handle dosimeter and instrument records
- development and maintenance of process control systems to control and monitor irradiation performance.

METEOROLOGICAL AND CLIMATOLOGICAL SERVICES

Operational meteorological support (numerous types of forecast and emergency response functions) and climatological support (monthly and annual summaries, compendia, and special requests) are provided by this project to government agencies and subcontractors involved in the Hanford Site mission. The project helps ensure that activities on the Hanford Site which could be severely affected by adverse meteorological conditions (e.g., strong winds, dense fog, snow storms) can operate in as safe and efficient a manner as possible. Also, meteorological response is provided on an around-the-clock basis in the event of a suspected or actual release of radioactive or hazardous material to the atmosphere, so that personnel involved in responding to the event can make appropriate decisions in a timely manner.

EMERGENCY PREPAREDNESS

This project provides emergency planning and preparedness services that support both the Hanford Site and DOE Region 8 (Washington, Oregon, and Alaska). These services include the development and/or implementation of DOE regulations and support for mutually beneficial emergency preparedness efforts with federal, state, and local governments. The project maintains trained personnel and associated monitoring equipment in a state of readiness to respond to accidental hazardous material releases on-site or off-site. Other activities include providing training to community response personnel, maintaining a unified dose assessment center (UDAC), mobile laboratory, and command van, and developing and maintaining an emergency management support (EMS) system.

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