

The Groundwater/Vadose Zone Integration Project
A Holistic Approach to Managing Hanford's Water Resources
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Hanford's community of affected people is large, passionate, diverse, and geographically dispersed, but they are all united by a concern to protect the Columbia River. The Columbia River crosses the 560 square mile Hanford Nuclear Reservation and flows between the States of Oregon and Washington to the Pacific Ocean.

In December 1997, the Department of Energy's (DOE) Headquarters and Richland Operations Office (DOE-RL) initiated a new project – the Groundwater/Vadose Zone Integration Project (Project) to protect the Columbia River. Since then, a Project Team consisting of Pacific Northwest National Laboratory, Fluor Daniel Hanford, and other Hanford contractors have been working together under Bechtel Hanford, Inc.'s (BHI) leadership. The Project Team is working to prepare a sitewide baseline and long range plan to better manage and speed remediation of the Hanford site's nuclear and chemical contamination in the soil (vadose zone), and groundwater and Columbia River.

The Project was created for these reasons:

- The fragmentation of technical work conducted over five decades on separate projects and by multiple contractors has resulted in critical knowledge gaps and inefficiencies.
- Individual cleanup project endpoints must lead to a defensible endstate for the Hanford Site clean up mission.
- There is a need to increase public trust and credibility in the Hanford cleanup.
- Receptor impacts along the Columbia River are at the heart of technical risk-based cleanup decisions. Cultural and economic impacts need to be adequately evaluated in this context.

The Project Team is working closely with the Tribal Nations, regulators, stakeholders, and the State of Oregon, to develop the Project approach. The Project has used a fully open and inclusive involvement process to ensure that the many interested people and audiences are informed and involved.

The USEPA and the Washington State Department of Ecology are the primary environmental regulators at Hanford, and partners with DOE-RL in the clean up which is governed by the Tri Party Agreement. The Oregon Department of Energy is considered a significant stakeholder for the Hanford clean up, and especially for this project which is focused on the Columbia River.

The Project will include a cumulative effects assessment consistent with the work accomplished by the Columbia River Comprehensive Impact Assessment (CRCIA) Team in 1998. The stated purpose of the CRCIA was to assess the effects of Hanford derived materials and contaminants on the Columbia River environment, river dependent life, and users of river resources. The Project shares this assessment goal.

The Project Team is developing an applied science program to meet Hanford characterization and assessment needs in support of ongoing clean up decisions and the eventual Hanford mission completion around the year 2050. As a first step, critical gaps in knowledge and existing data for the vadose zone, groundwater, river systems, and waste inventory technical elements has been evaluated using national laboratory expertise. The movement of contaminants through the subsurface and into the Columbia River has been the question paramount in these evaluations.

A risk technical element is also being prepared with help from stakeholders and Tribal Nation experts. Location specific dependency webs are being crafted to help tell the story about risk, including human health, ecotoxicity, socio-economic, and socio-cultural parameters.

A Science and Technology Plan has been written and is available for public comment and review. Specific science and technology products, which serve the needs of the individual projects and the system assessment, are now being defined and will be included in a “science and technology roadmap”.

The Project Vision states, “Completion of the Project mission has established broad trust and collaboration that resulted in credible decisions, based on defensible science, that effectively and efficiently protected water resources.” To accomplish the Project Vision, a holistic management approach must guide the complex Hanford clean up and evaluate the long-term and off site impacts of Hanford contaminants on water resources and the users of the Columbia River.

The Project it’s planning phase is concluding, and the Draft Project Specification and Long Range Plan has completed a 60-day public comment period. This Plan will be revised and reissued on June 30,1999, with revisions annually.

As the Project moves forward, several significant challenges and vulnerabilities face the Project, including:

-The Project represents a different management approach and a departure from DOE tradition. Can the Project efficiently and effectively execute its mission over the long term, within the current management system and structure?

-The System Assessment Capability includes the development and compilation of the tools and information needed to conduct a site-wide assessment of risks and impacts. Such a task is inherently difficult to develop and manage on a critical path. An uncertainty analysis must be included for an acceptable assessment and analysis to occur. Can the Project maintain its schedule with current levels of project involvement/public participation and constrained funding? Can the System Assessment Capability meet the needs of its many customers including regional stakeholders, regulators, and multiple Hanford clean up projects?

-Commitment is required by DOE, Washington State Department of Ecology, and USEPA to develop of an integrated regulatory framework. Can a consistent set of regulatory requirements be agreed to which will guide impact assessment and clean up actions?

-Public and Tribal Nation participation and support is required for the Project to be successful. Trust and credibility take time to develop. Can the Project successfully manage in the face of diverse interests and reach a consensus regarding the Project's direction, content, and decision-making processes?

The Draft Project Specification document and information about the Project can be found at <http://www.bhi-erc.com/vadose>.

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