



## CHANGES IN THE RECERTIFICATION PERFORMANCE ASSESSMENT

Performance Assessments (PA) are conducted by DOE to demonstrate that the WIPP meets EPA's release requirements for radionuclides. DOE included a PA in the first certification application and a revised PA was developed for the 2004 recertification application. During EPA's review of the recertification PA, both EPA and DOE independently identified several technical changes and corrections that were necessary. Because of these changes, EPA directed DOE to conduct a new PA to demonstrate continuing compliance for recertification. DOE's revised PA is now called the Performance Assessment Baseline Calculations (PABC) and included all of the changes required by EPA. The PABC shows that WIPP continues to meet EPA's limits for the release of radionuclides.

### What's New in the 2004 Recertification PA:

- The waste inventory has been updated to include new information on potential waste streams. For more information on the waste inventory see Fact Sheet #4, *TRU Waste Inventory*.
- The updated waste inventory shows that when filled to capacity, the repository is projected to have less radioactive content than was previously expected in the certification PA.
- Projected increases in the drilling rate near the WIPP may result in slightly higher releases than those stated in the certification PA. Even with an increased drilling rate, however, the potential releases are still well below EPA's release limits.
- Changes were made to PA parameters, to incorporate new information gained since certification.
- DOE incorporated the characteristics of the panel closure system that was specified by EPA in 1998.
- Incorporation of a simplified model for the sealed shafts.
- A new model for predicting the release of solids, called spallings, released in the event of drilling through the WIPP repository.

## 2006 EPA WIPP FACT SHEET No. 3

### What is Performance Assessment?

Performance Assessment (PA) is an investigation of the likelihood that the WIPP will meet release limit requirements for radionuclides. EPA required DOE to conduct a PA as part of the Certification Application to consider how both natural and man-made processes may affect the WIPP disposal system. The PA uses computer models to evaluate hundreds of combinations of possible events to determine the impact on repository performance.

The results of the 1998 certification PA showed that the human intrusion scenario is the most important release mechanism. No appreciable releases occur in the undisturbed scenario.

The PA has changed since the 1998 certification of WIPP to reflect new data collected by DOE. All changes to the PA are reviewed by EPA. DOE's recertification PA is now called the PABC. It takes into account new information and knowledge learned about the WIPP over its first five years of operation.

EPA conducted a detailed review of the recertification PABC. Although the PABC does indicate more potential releases from a human intrusion event, the possible releases remain well within the limits established by 40 CFR 191. EPA determined that the PABC is a sufficiently conservative and current representation of the knowledge of the WIPP and how it will interact with the surrounding environment.

## Human Intrusion

Of all the features, events and processes that are considered for the performance assessment calculations, the human intrusion scenarios related to drilling have been shown to have the most significant impact on the disposal system and its ability to contain waste. Human intrusion refers to the breaching of any portion of the WIPP disposal facility by human activity.

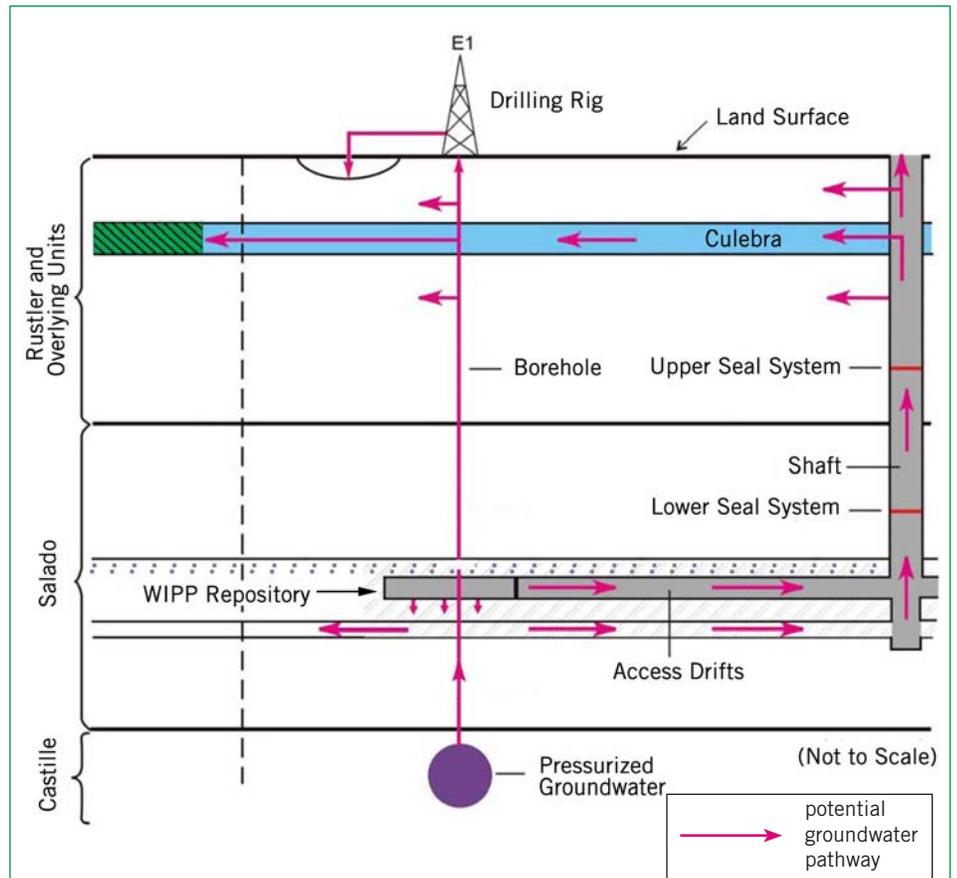
DOE is required to track human activities within the Land Withdrawal Boundary (LWB)<sup>1</sup> for 100 years after closure of the facility to ensure that no intrusion occurs. Analysis shows that drilling is the most likely human activity to have an impact on WIPP's ability to contain radioactive waste.

The risk of breaching the disposal facility through drilling activity associated with resource extraction is the major concern. A drilling borehole that goes through the repository creates a potential for the release of radionuclides in the vicinity of the borehole. Drilling through the repository and into the pressurized groundwater below it (if present) could also create a release risk by forcing the groundwater through parts of the repository. The figure to the right shows the probable pathway for the release of radionuclides if such events were to occur.

While drilling is not permitted inside the Land Withdrawal Boundary with the exception of wells for subsurface investigations, the total number of wells drilled outside the LWB and inside the Delaware Basin has increased by 12% since the certification PA. Even with this increase, the recertification PA shows that the WIPP continues to remain in compliance with radioactive waste release limits.

More information on the consideration of human intrusion for recertification can be obtained from EPA's website or docket.

<sup>1</sup>The Land Withdrawal Boundary (LWB) is a 16 square mile area that extends outwards from the center of the WIPP facility for about 2 miles in all directions. The surface area map in Fact Sheet #6, *Karst*, shows the LWB in relation to the WIPP facility and nearby natural features.



### Human Intrusion by Drilling.

The figure above shows potential pathways for radionuclide releases in the event of drilling a borehole through the repository and into a pocket of pressurized groundwater. Groundwater mobilized by drilling could carry radionuclides into groundwater or to the surface through the borehole.

Other potential pathways for radionuclide releases due to drilling include cuttings, cavings and spillings:

Cuttings are solids that are cut from the borehole by the drill and brought to the surface.

Cavings are solids that fall from the wall of the borehole.

Spallings are solids that are forced into the borehole by pressurized gas when a hole is drilled into the repository.

All of these scenarios are considered in WIPP performance assessments.

### Fact Sheets in this Series:

Recertification	Fact Sheet No. 1
Public Involvement	Fact Sheet No. 2
Performance Assessment	Fact Sheet No. 3
TRU Waste Inventory	Fact Sheet No. 4
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