



Department of Energy

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QA: N/A
Project No. WM-00011

OCT 03 2003

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TRANSMITTAL OF REPORT *TECHNICAL BASIS DOCUMENT NO. 8: COLLOIDS* ADDRESSING KEY TECHNICAL ISSUE (KTI) AGREEMENTS RELATED TO COLLOIDS

This letter transmits *Technical Basis Document No. 8: Colloids*, Revision 2 (enclosure 1), and a CD format of the report (enclosure 2). This technical basis document contains a summary of the current conceptual understanding of colloid-facilitated radionuclide transport and provides the context within which individual KTI agreements related to colloids are addressed. Appendices A through H provide direct responses to the following Evolution of the Near-Field Environment (ENFE), Radionuclide Transport (RT), Total System Performance Assessment and Integration (TSPAI) KTI agreements, and related General (GEN) 1.01 agreements:

- Appendix A – Exclusion of Entrained Colloids in Thermal-Chemical Alteration (Response to ENFE 1.06, ENFE 4.04, and GEN 1.01 (Comment 35))
- Appendix B – Sensitivity Analysis of Colloid Transport Parameters (Response to ENFE 4.06 AIN-1 and GEN 1.01 (Comments 35 and 37))
- Appendix C – Screening Out Coupled Thermal-Hydrologic-Chemical Effects (Response to ENFE 4.03 and GEN 1.01 (Comments 35 and 37))
- Appendix D – Contrasting Colloid Concentrations in the Engineered Barrier System and Saturated Zone (Response to TSPAI 3.30 and GEN 1.01 (Comments 43 and 46))
- Appendix E – Sensitivity Studies to Test Importance of Colloid Transport Parameters and Models (Response to RT 3.07 and GEN 1.01 (Comments 35, 43, and 46))
- Appendix F – Transport of Dissolved and Colloidal Radionuclides Through Invert (Response to TSPAI 3.17 and GEN 1.01 (Comments 36 and 38))
- Appendix G – Screening Criteria for Attachment of Radionuclides to Colloids (Response to RT 1.03 AIN-1, ENFE 3.05 AIN-1 and ENFE 4.05 AIN-1)
- Appendix H - Changes in Colloid Concentrations Due to Shifts in pH and Ionic Strength (Response to TSPAI 3.42)

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OCT 03 2003

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