	Model Error Resolution Document *Complete only applicable items.*	QA: QA Page 1 of 3

INITIATION

1. Originator:	2. Date:	3. ERD No.
Shaoping Chu	05/27/2008	MDL-NBS-HS-000020 ERD 03

4. Document Identifier:	5. Document Title:
MDL-NBS-HS-000020 REV02 AD 02	Particle Tracking Model and Abstraction of Transport Processes

6. Description of and Justification for Change (Identify applicable CRs and TBVs):

This ERD makes editorial corrections to MDL-NBS-HS-000020 ERD 02. ERDs 02 and 03 resolve CR 12112.

(see attached)

CONCURRENCE

	Printed Name	Signature	Date
7. Checker	Kenneth Rehfeldt	Kenneth Rehfeldt	06/02/2008
8. QCS/QA Reviewer	Peter Persoff	Peter Persoff	06/02/2008

APPROVAL

9. Originator	Shaoping Chu	Shaoping Chu	06/02/2008
10. Responsible Manager	Paul Dixon	Paul Dixon	6-3-08

(Continued from Block 6)

I Background Information Summary

CR 12112

During the process of examining mass balance calculations from FEHM Version 2.24-01, it was noticed that the filtration logic for colloids passing between units in the rock matrix was not filtering out any of the particles based on particle size versus pore size. An examination of the FEHM source code showed that in the subroutine inmptr.f, there is a line that sets the random seed (rseed), which was previously read from the multi-species particle tracking file, to zero. This logic is only implemented for the coupled GoldSim/FEHM model, and was done so because the TSPA-LA GoldSim model passes the random seed to FEHM. The problem with this logic is that the random seed is later used inside the subroutine inmptr.f (and before the random seed passed from GoldSim is assigned in FEHM). A random seed of zero will force the random seed function used by FEHM to pass back a random number of zero. When this random number of zero is used in conjunction with the logic in inmptr.f, to sample colloid sizes and assign one to each potential particle, each particle is given a particle size of zero which will make it smaller than any sampled pore size and negate its chances of getting permanently filtered. This problem is also found in FEHM Version 2.25.

In addition in FEHM Version 2.24-01 and older versions, the backspace statement in the following logic does not use the correct file unit number, therefore only every other line of the distribution will be read. This problem occurs when the "mptr" macro is provided in a separate file than the main "dat" file, which is the case for the TSPA model files and many other runs of the model. When the mptr macro is contained in the "dat" file, the problem will not occur.

MDL-NBS-HS-000020 ERD 02 addressed this issue concerning MDL-NBS-HS-000020 REV 02 AD 02. The present ERD 03 is written to correct typographical errors in ERD 02 and provide additional clarification. These changes to MDL-NBS-HS-000020 ERD 02 do not have any impact on the conclusions of the parent document, or to the conclusions of any existing downstream technical products such as the TSPA-LA or the SAR.

II Inputs and/or Software

None.

III Analysis and Results

The following changes are made to the text of MDL-NBS-HS-000020 ERD 02:

In Section I, change the first two sentences in paragraph 1 from:

> "This ERD presents additional simulations that explicitly exclude colloid filtration and negate the colloid filtration process and provides results that are consistent with the

implementation in the TSPA. Although the process of colloid filtration is correctly implemented in the simulations in MDL-NBS-HS-000020 REV 02 AD 02, the coding logic identified in CR-12112 negates the colloid filtration process in TSPA simulations."

to:

"This ERD presents additional simulations that explicitly exclude colloid filtration at the interface between hydrogeologic units and negate the colloid filtration process, and provides results that are consistent with the implementation in the TSPA. Although the process of colloid filtration is correctly implemented in the simulations in MDL-NBS-HS-000020 REV 02 AD 02, the coding logic identified in CR-12112 negates the process of colloid filtration at the interface between hydrogeologic units in TSPA simulations."

In Section I, paragraph 2, delete the space from the number of the Software Problem Report, changing it from "SPR 20080505001" to "SPR20080505001".

In Section III, paragraph 1, line 4, change "simulations" to "simulation"

In Section IV, page 16, paragraph 1, Change the fourth and the fifth sentences in the first paragraph from:

"As was demonstrated in Section III, the breakthrough curves without colloid filtration differ only slightly from the breakthrough curves without colloid filtration. Furthermore, those breakthrough curves, as implemented in TSPA, will result in slightly higher dose."

to:

"As was demonstrated in Section III, the breakthrough curves without colloid filtration differ only slightly from the breakthrough curves with colloid filtration. Furthermore, those breakthrough curves without colloid filtration, as implemented in TSPA, will result in slightly higher dose."

The comparison that was documented in MDL-NBS-HS-000020 ERD 02 had no impact on the conclusions of MDL-NBS-HS-000020 REV 02 AD 02. These editorial corrections do not change that assessment. There is no detrimental impact to the conclusions MDL-NBS-HS-000020 REV 02 AD 02 or to any downstream technical documents.

IV Impact Evaluation

The clarifications and editorial corrections described in Section III have no impact on the impact evaluation in MDL-NBS-HS-000020 ERD 02, and they have no impact to the conclusions MDL-NBS-HS-000020 REV 02 AD 02 or to any downstream technical documents.