	Model **Error Resolution Document** *Complete only applicable items.*	QA: QA Page 1 of 6

INITIATION

1. Originator:	2. Date:	3. ERD No.
Al-Aziz Eddebbarh	04/02/2008	MDL-NBS-HS-000011 ERD 01

4. Document Identifier:	5. Document Title:
MDL-NBS-HS-000011 REV03	Saturated Zone Site-Scale Flow Model

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

This ERD resolves TBVs and CRs associated with *Saturated Zone Site-Scale Flow Model* (MDL-NBS-HS-000011 REV03), as listed below:

- **TBV-8364**
- **TBV-8366**
- **TBV-8369**
- **TBV-8441**
- **CR-10893**
- **CR-11184**
- **CR-11615**
- **CR-11729**
- **CR-11748**
- **CR 11914**

Changes related to these TBVs and CRs, together with additional minor corrections, are presented in the attachment to this ERD.

CONCURRENCE

	Printed Name	Signature	Date
7. Checker	Kenneth Rehfeldt	Kenneth Rehfeldt	04/02/2008
8. QCS/QA Reviewer	Peter Persoff	Peter Persoff	04/02/2008
APPROVAL			
9. Originator	Al-Aziz Eddebbarh	Bruce A. Robinson for Al Eddebbarh	04/02/2008
10. Responsible Manager	Paul Dixon	Paul Dixon	4-3-08

I Background Information Summary

TBV-8364: Two hydrologic parameters values are updated in Section 7.2.2.1.2. The following sentence should be replaced: "The results indicated a transmissivity of about 21 m^2/day and an average hydraulic conductivity of 0.15 m/day, approximately equivalent to a permeability of 0.2×10^{-12} m^2 (SNL 2007 [DIRS 177394], Section 6.4.5 and Appendix F7)."

The correction is based on values from Section F1.3 of the cited reference as follows: "The results indicated a transmissivity of about 28 m^2/day and an average hydraulic conductivity of 0.20 m/day, approximately equivalent to a permeability of 0.2×10^{-12} m^2 (SNL 2007 [DIRS 177394], Section 6.4.5 and Appendix F1)."

Page 7-19, last paragraph, replace (SNL 2007 [DIRS 177394], Appendix G) with (SNL 2007 [DIRS 177394], Appendix F).

TBV-8366: The following two sentences on page 6-53 are revised: "A recent update to infiltration estimates in the region immediately surrounding Yucca Mountain (SNL 2007 [DIRS 174294]) was used to supply new percolation fluxes to the UZ flow model, which yielded a weighted flow through its footprint of 8.4 kg/s under present-day climatic conditions (SNL 2007 [DIRS 184614], Table 6.2-7). While this is a 49% increase over the previous net infiltration through the UZ footprint (5.6 kg/s), it remains a small portion of the infiltration budget, 13%, and a correspondingly smaller portion of the entire flow budget through the lateral boundaries, equal to about 1%."

The revised text is: "A recent update to infiltration estimates in the region immediately surrounding Yucca Mountain (SNL 2007 [DIRS 174294]) was used to supply new percolation fluxes to the UZ flow model, which yielded a weighted flow through its footprint of 8.5 kg/s under present-day climatic conditions (SNL 2007 [DIRS 184614], Table 6.2-7 and DTN: LB0701PAWFINFM.001 [DIRS 179283], file: *factors.doc*). While this is a 49.6% increase over the previous net infiltration through the UZ footprint (5.6 kg/s), it remains a small portion of the infiltration budget, 13.2%, and a correspondingly smaller portion of the entire flow budget through the lateral boundaries, equal to about 1%." This resolves the same issue as CR-11914.

TBV-8369: The cited document is incorrect. The report cites ANL-WIS-MD-000026 REV 00 (SNL 2008 [DIRS 179476]), but it should cite ANL-WIS-MD-000027 REV 00 (SNL 2008 [DIRS 183041]). The changes occur on pages 1-4, 6-1, and 6-2. The reference should also be revised on page 9-15. Note that the change is also required to page 9-15 of the ACN because the reference was missing from the REV 03 version. The reference on page 9-15 should be as follows:

183041 SNL (Sandia National Laboratories) 2008. *Features, Events, and Processes for the Total System Performance Assessment: Analyses.* ANL-WIS-MD-000027 REV 00. Las Vegas, Nevada: Sandia National Laboratories. ACC: DOC.20080307.0003.

TBV-8441: On pages 6-83, 6-84, 6-85 and 9-15, the DIRS entry should be changed from 178871 to 183478 and the year for DIRS entry should be changed from 2007 to 2008. The DIRS number change is needed to update the citation from the base case of the TSPA to the addendum version. The change to page 6-83 and Section 9 should also be done on ACN 01 of the parent document.

The following CRs are also addressed in this ERD: CR-10893, CR-11615, CR-11748, CR-11729, and CR-11184.

CR-10893: This CR concerns a discrepancy between inputs listed in DIRS and Section 9 of MDL-NBS-HS-000011 REV 03, but was corrected in the ACN. Because the references were addressed in the ACN, no further changes are needed to the document.

CR-11184: This CR is addressed in MDL-NBS-HS-000011 REV03, Section 6.4.3.9 (although there is no mention of the CR resolution in MDL-NBS-HS-000011 REV03). An analysis of the change in recharge as a result of the recent update to infiltration estimates in the region immediately surrounding Yucca Mountain (SNL 2007 [DIRS 174294]) is on page 6-53 of the SZ flow report. The change history of the report needs to list this CR as being addressed on page 6-53.

CR-11615: This CR is concerned with DIRS management and is addressed through the DIRS system. Its resolution does not affect the text of the report. Nevertheless, the reference section of the report was rebuilt and is consistent with the text.

CR-11729: Sections 6.3.1.3 and 6.3.1.6 of the report refer erroneously to Section 6.3.2.5, which does not exist. The correct section to be referred is Section 6.3.1.5.

CR-11748: On page 6-53 of the report, the UZ recharge is listed as 8.4 kg/s. This needs to be changed to 8.5 kg/s and a reference needs to be added for the weights mentioned earlier in the sentence. The sentence in question should be changed as follows: "A recent update to infiltration estimates in the region immediately surrounding Yucca Mountain (SNL 2007 [DIRS 174294]) was used to supply new percolation fluxes to the UZ flow model, which yielded a weighted flow through its footprint of 8.5 kg/s under present-day climatic conditions (SNL 2007 [DIRS 184614], Table 6.2-7 and DTN: LB0701PAWFINFM.001 [DIRS 179283], *factors.doc*). While this is a 49.6% increase over the previous net infiltration through the UZ footprint (5.6 kg/s), it remains a small portion of the infiltration budget, 13.2%, and a correspondingly smaller portion of the entire flow budget through the lateral boundaries, equal to about 1%." This resolves the same issue as TBV-8366.

CR-11914: When MDL-NBS-HS-000011 REV 03 ACN 01 was submitted to CDIS, one page was omitted. The ACN is complete in RISweb with accession number LLR.20071004.0010.

II Inputs and/or Software

There are no direct inputs to this error resolution document.

No software controlled under IM-PRO-003, *Software Management*, is used in the analysis contained in this error resolution document.

III Analysis and Results

III.1 Analysis of TBV-8364

The issue is in Section 7.2.2.1.2 of MDL-NBS-HS-000011 REV03. The section in question lists values of transmissivities that are different from those listed in the referenced report (SNL 2007 [DIRS 177394]). These transmissivity and hydraulic conductivity values are used to calculate permeabilities, which are used for validation purposes. There is a difference of 25% between the correct value and the erroneous value. This is within the range of uncertainty used in TSPA, so only the values listed in the text needed to be updated. There is no change to the conclusions as a result of these changes to the text.

III.2 Analysis of TBV-8366

The issue is on page 6-53 of MDL-NBS-HS-000011 REV03. The section in question lists a value of recharge from the UZ model that is slightly in error. The change in the percentage of recharge from the UZ increased from 49% to 49.6% as a result of using the updated infiltration values. This minor increase does not change the conclusions listed on page 6-53 nor does it alter any conclusions of the document. A reference to the DTN added needs to be added to the reference section. The reference is as follows:

179283 LB0701PAWFINFM.001. Weighting Factors for Infiltration Maps. Submittal date: 01/25/2007.

III.3 Analysis of TBV-8369

The correct reference is now listed as follows:

183041 SNL (Sandia National Laboratories) 2008. *Features, Events, and Processes for the Total System Performance Assessment: Analyses.* ANL-WIS-MD-000027 REV 00. Las Vegas, Nevada: Sandia National Laboratories. ACC: DOC.20080307.0003.

The reference correction does not impact the parent document or any downstream documents. These changes do not impact the conclusions of the parent document.

III.4 Analysis of TBV-8441

This TBV involves changing the DIRS reference, which is the only impact on the parent document. This TBV has no impact on downstream users of the parent document. The correct reference is as follows:

183478 SNL (Sandia National Laboratories) 2008. *Total System Performance Assessment Model /Analysis for the License Application.* MDL-WIS-PA-000005 REV 00 AD 01. Las Vegas, Nevada: Sandia National Laboratories. ACC: DOC.20080312.0001.

III.5 Analysis of CR-10893

This CR was resolved in the ACN of the report.

III.6 Analysis of CR-11184

Although not identified by number in the parent report, this CR was resolved in the parent report.

III.7 Analysis of CR-11615

Resolution of this CR does not affect the parent report. No changes are done to the parent document and therefore no impact the conclusions of the parent document.

III.8 Analysis of CR-11729

There is no impact from resolution of this CR on any existing downstream technical products because the issue was simply an erroneous section call-out in a reference in Sections 6.3.1.3 and 6.3.1.6 of MDL-NBS-HS-000011 REV03. The sections in question refer erroneously to Section 6.3.2.5, which does not exist. The correct section to be referenced is 6.3.1.5. This is an internal cross reference that does not impact any downstream users. The impact on the parent report is correction of the internal reference by changing the reference call-outs in Sections 6.3.2.5 and 6.3.1.6 to Section 6.3.1.5 instead of 6.3.2.5. These changes do not impact the conclusions of the parent document.

III.9 Analysis of CR-11748

There is no impact of this CR resolution on any existing downstream technical products because the change in the reported value is small (8.4 versus 8.5 kg/s) and the value is used in an internal analysis so that conclusions do not change as a result of the correction. The impact on the parent report is correction to the text on page 5-53 as follows:" "A recent update to infiltration estimates in the region immediately surrounding Yucca Mountain (SNL 2007 [DIRS 174294]) was used to supply new percolation fluxes to the UZ flow model, which yielded a weighted flow through its footprint of 8.5 kg/s under present-day climatic conditions (SNL 2007 [DIRS 184614], Table 6.2-7 and LB0701PAWFINFM.001, *factors.doc* [DIRS: 179283]. While this is a 49.6% increase over the previous net infiltration through the UZ footprint (5.6 kg/s), it remains a small portion of the infiltration budget, 13.2%, and a correspondingly smaller portion of the entire flow budget through the lateral boundaries, equal to about 1%."

III.10 CR-11914

The ACN is now complete in RISweb with accession number LLR.20071004.0010, and the CDIS document has been corrected. No change is needed in the parent document to address this CR.

III.11 Additional Minor Corrections

On page 6-45 (Section 6.4.3.5), two references in the last paragraph of the section should be changed from (SNL 2007 [DIRS 174109], Appendix A) to (SNL 2007 [DIRS 174109], Appendix B). A change of reference to MDL-NBS-HS-000024 REV 01 Appendix A to Appendix B is needed.

IV Impact Evaluation

The resolution of the TBVs, CRs, and updates to the parent report described in this ERD do not have any impact on any existing downstream technical products such as the TSPA-LA or the SAR.