Alicia Mullins

From: David Pickett
Sent: Monday, February 05, 2007 5:13 PM
To: James Winterle
Subject: Invert parameters
Attachments: ENG4 invert parameters.xls

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Jim,

I've attached a file that's a subset of the ENG4-related TPA parameters. The parameters have to do with the invert. I saw your name on some of them, so I wonder if you would be able to take a look and see if anything needs to be changed. I'll take care of the filter factors, leaving only five others.

I spoke to Osvaldo today, and he says there are some problems with the invert abstraction and it is best avoided. Having a default of 1 for InvertBypass(0=ebsfilt,1=bypass-ebsfilt), as it is, should take care of this. So it's unlikely any of these parameters will be used. But we'll probably need to say something in the chapter to the effect that the invert should be invoked with care.

David

Name	Description	PDF Type	Value(s)	Justification		Contact	TPA Section	ISI Lead	User Guide Chapter#
PermanentLossColloidFilterFactor_Invert_Ja[]	The proportion of americium irreversibly attached to colloids that is permanently removed by filtration in the invert	constant	0.0	Assigned artificial values so as to eliminate any filtering of colloids by the invert, based in part on analyses by BSC (2003?) and Rechard et al. (2003) [ALOG, REL]	Check Refs. which BSC(2003)? Rechard et al (2003) not in list	D. Pickett	EBSFILT	ENG4	10
PermanentLossColloidFilterFactor_Invert_Jc[]	The proportion of curium irreversibly attached to colloids that is permanently removed by filtration in the invert	constant	0.0	Same as PermanentLossColloidFilterFactor_Invert_Ja[]		D. Pickett	EBSFILT	ENG4	10
PermanentLossColloidFilterFactor_Invert_Jp[]	The proportion of plutonium irreversibly attached to colloids that is permanently removed by filtration in the invert	constant	0.0	Same as PermanentLossColloidFilterFactor_Invert_Ja[]		D. Pickett	EBSFILT	ENG4	10
PermanentLossColloidFilterFactor_Invert_Jt[]	The proportion of thorium irreversibly attached to colloids that is permanently removed by filtration in the invert	constant	0.0	Same as PermanentLossColloidFilterFactor_Invert_Ja[]		D. Pickett	EBSFILT	ENG4	10
InvertThickness[m]	Invert thickness (m)	constant	0.606	Max thickness of invert, as described in the DOE EBS Transport Abstraction (Bechtel SAIC Company, LLC, 2001a).	(J. Winterle: 5/3/05)	D. Pickett	EBSFILT	ENG4	10
InvertDiffusionCoefficient[m^2/yr]	Diffusion coefficient for the invert (m2/yr)	constant	3.0e-3	Molecular self-diffusion for water at 25C (2.3E-5 cm2/s), reduced to account for saturated porosity of (0.1) and tortuosity factor of (0.4).	(J. Winterle: 5/3/05)	D. Pickett	EBSFILT	ENG4	10
InvertBypass(0=ebsfilt,1=bypass-ebsfilt)	Flag for selecting to perform calculations for transport through the invert. A value of 1 indicates that the transport through invert is skipped	iflag	1	User option. Program control switch to investigate effects of the invert	(R. Fedors: 5/20/05) (O. Pensado: SCR 626)	D. Pickett	EBSFILT	ENG4	10
InvertRockPorosity	Porosity of the invert	constant	0.13	The aggregate that is currently slated to be used for the invert is derived from the host rock. Flow through the invert could occur by intergranular or intragranular pathways. Because low flow rates are expected from the waste package and beneath the drip shield, the matrix porosity and permeability of the invert should reflect that of the host rock, not the intergranular space between the host rock cobble and gravel sized fragments. At high flow rates, the intergranular space in the invert will dominate flow, but the TPA Version 5.0 bypasses (time-wise and radionuclide sorption-wise) the invert if the flux is greater than the invert permeability. Hence, at most expected water flux rates to the invert, the matrix of the grains will control the transport, otherwise, bypassing occurs. The value of 0.13 (Flint, 1998) reflects the average porosity of the most common host rock material, the Topopah Springs lower lithophysal unit.	(R. Fedors: 5/20/05)	D. Pickett	EBSFILT	ENG4	10

InvertMatrixPermeability[m^2]	Matrix permeability of the invert (m2)	lognormal	3.e-19, 3.e-16	The aggregate that is currently slated to be used for the invert is derived from the host rock. Flow through the invert could occur by intergranular or intragranular pathways. Because low flow rates are expected from the waste package and beneath the drip shield, the matrix porosity and permeability of the invert should reflect that of the host rock, not the intergranular space between the host rock cobble and gravel sized fragments. At high flow rates, the intergranular space in the invert will dominate flow, but the TPA Version 5.0 bypasses (time-wise and radionuclide sorption-wise) the invert if the flux is greater than the invert permeability. Hence, at most expected water flux rates to the invert, the matrix of the grains will control the transport, otherwise, bypassing occurs. The values of {3e-16, 3e-19 m2} reflects the average permeability of the most common host rock material (approximately 7e-18 m2, from Flint, 1998), the Topopah Springs lower lithophysal unit. The expanded range of permeability encompasses the mean values of both the middle nonlithophy	Check Ref.	D. Pickett	EBSFILT	ENG4	10