Mucool MTA Final Absorber Groundwater & Surface Water

	H3	Na22
K(atom/star)=	0.075	0.02
L=	0.9	0.135
Rho(soil)=	2.25	2.25
w=	0.27	0.52
Factor-ave=	1.40E-19	1.25E-20

SmtoSa= 0.019

dpmtoCi= 1.17E+06

*Save(star/cc-p)= **2.70E-11**

Hydro-xport R(Till)= **6.30E-09**

Tirr (yr) = **1**

Tbeam-off (yr) = **1**

	H3	Na22
Buildup	5.47E-02	2.34E-01
t1/2(yr)=	12.33	2.602
Lambda=	5.62E-02	2.66E-01
Decay=	9.45E-01	7.66E-01

	Tritium		Sodium		% of Total Limit	
Protons/year	C-initial (pCi/cc-y)	C-final (pCi/cc-y)	C-initial (pCi/cc-y)	C-final (pCi/cc-y)	Surface	Aquifer
2.01E+20	28	1.77E-07	2.5	1.58E-08	26.4%	0.000%
2.01E+20	55	3.45E-07	4.4	2.79E-08	47.0%	0.000%
2.01E+20	80	5.04E-07	5.9	3.71E-08	62.9%	0.000%
2.01E+20	104	6.54E-07	7.0	4.42E-08	75.4%	0.000%
2.01E+20	126	7.96E-07	7.9	4.96E-08	85.1%	0.000%
2.01E+20	148	9.30E-07	8.5	5.38E-08	92.8%	0.000%
2.01E+20	168	1.06E-06	9.0	5.70E-08	98.8%	0.000%
2.01E+20	187	1.18E-06	9.4	5.94E-08	**103.7%**	0.000%
2.01E+20	205	1.29E-06	9.7	6.13E-08	**107.5%**	0.000%
2.01E+20	222	1.40E-06	10.0	6.27E-08	**110.7%**	0.000%

Protons/year arbitrarily chosen to meet groundwater limit. Represents over 1430 pulses per hour continuously.

Star density estimate from K. Vaziri et al, "Surface and Groundwater Assessment of the Mucool Beam Absorber"
The absorber is not drained, so no surface water discharge is expected.

Name/Date		
Originated	W. Higgins	26-Apr-10
Checked		
Approved		