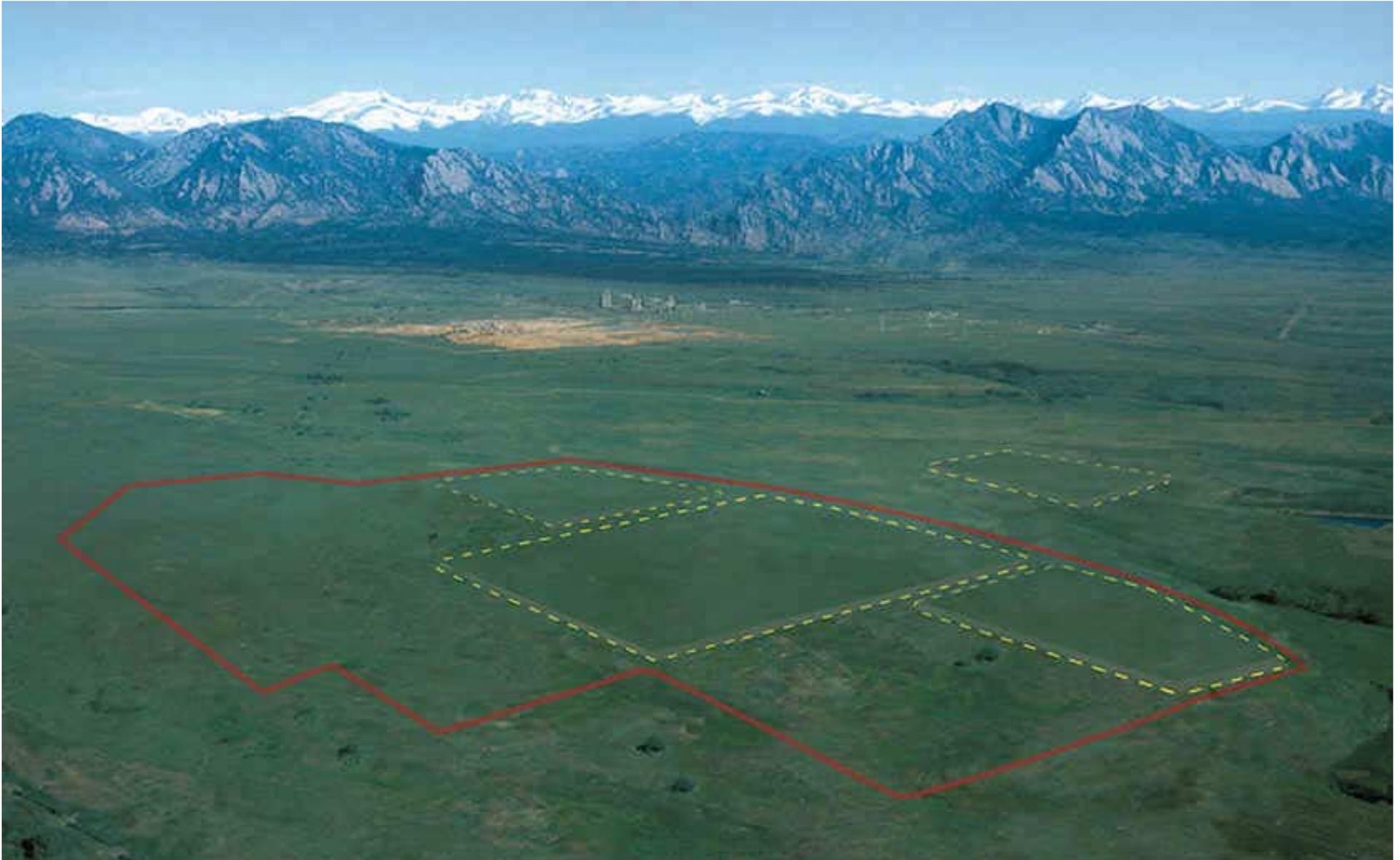
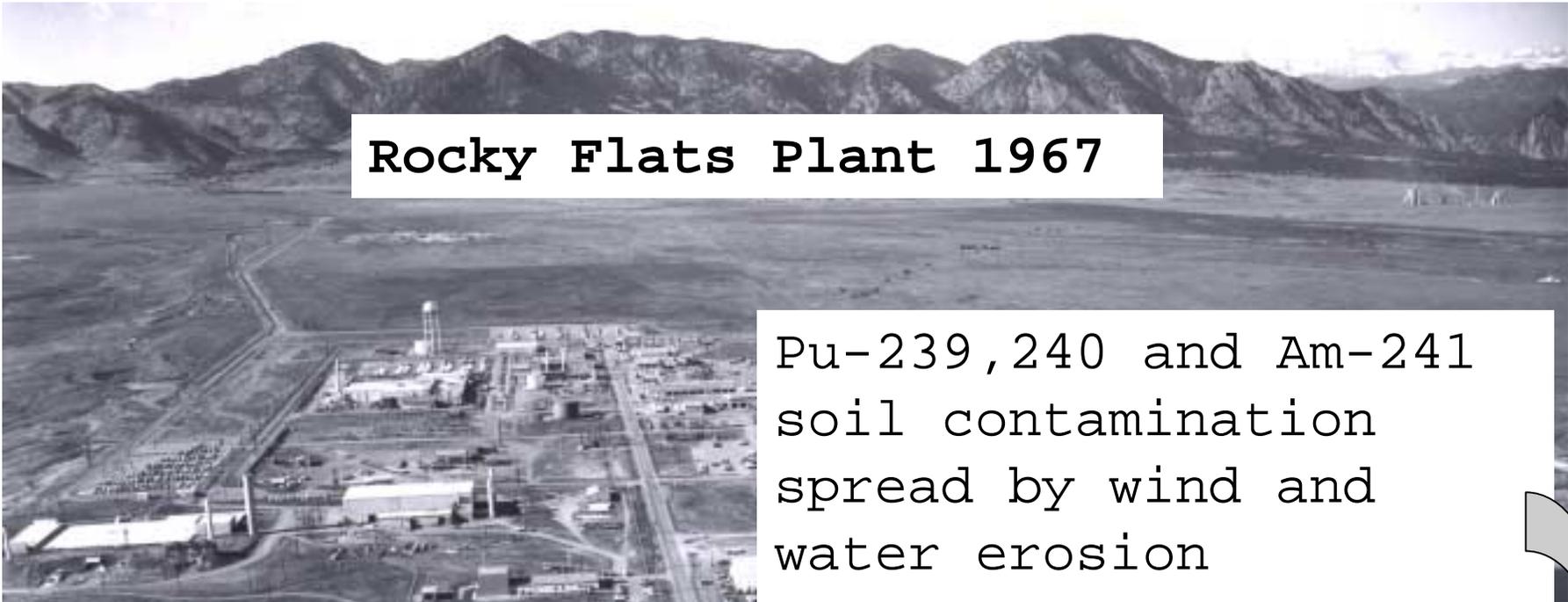


Rocky Flats Environmental Technology Site Vision for Final Configuration in 2006

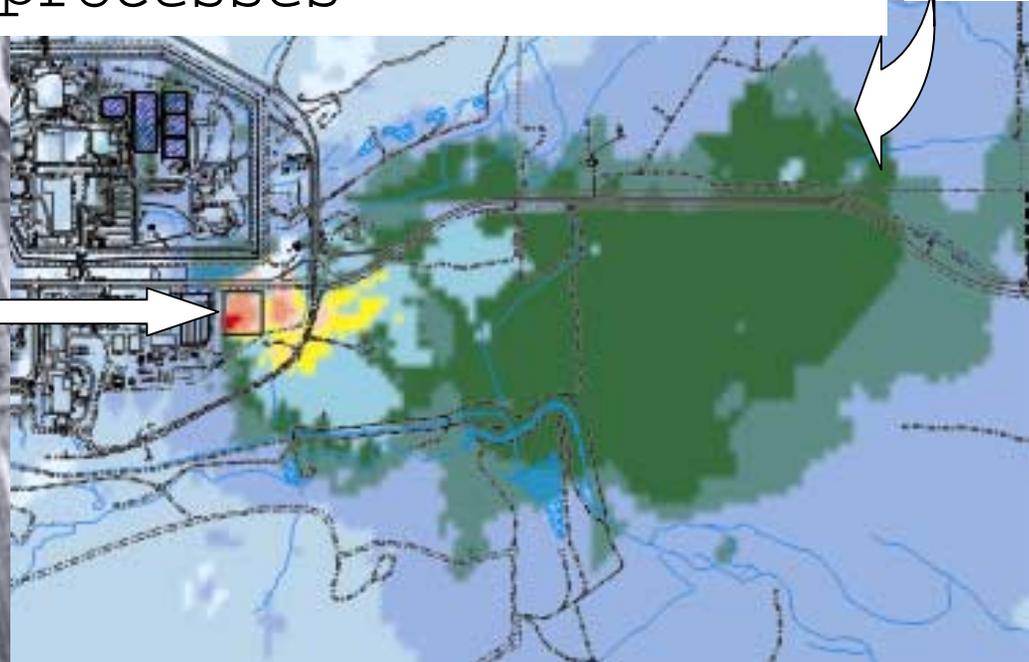


Rocky Flats Plant 1967



Pu-239, 240 and Am-241 soil contamination spread by wind and water erosion processes

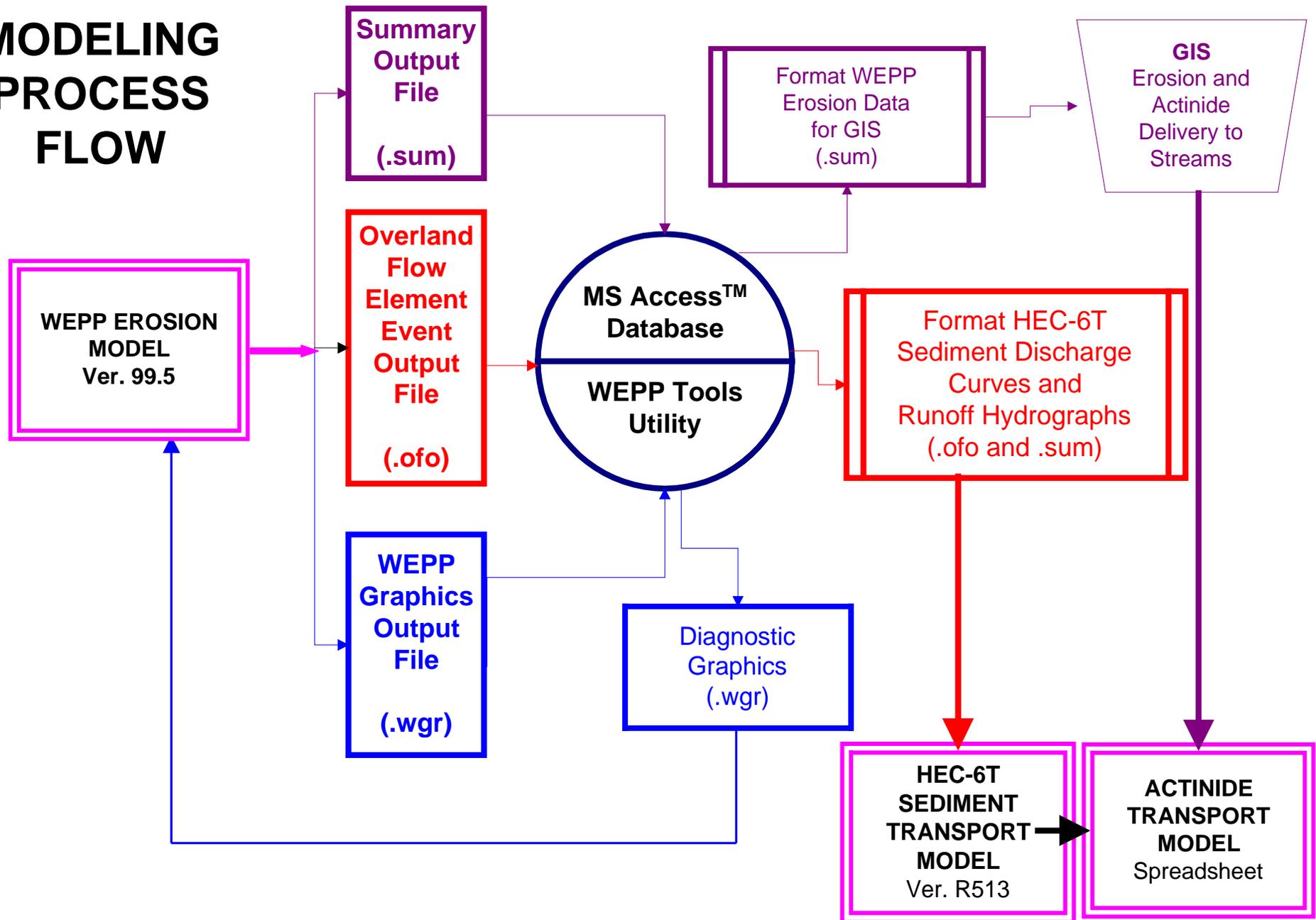
Actinide waste in drums on the 903 Pad



WATER EROSION PREDICTION PROJECT (WEPP) model used to predict overland flow, erosion, and sediment yield to Site streams.



MODELING PROCESS FLOW



WEPP TOOLS DATABASE

The screenshot displays three overlapping windows from the WEPP Tools software, each showing a different data table. The top window shows simulation parameters for a 100-year event in June. The middle window shows sediment characteristics for a specific hill slope. The bottom window shows a summary of annual runoff and sediment data for various hill slopes.

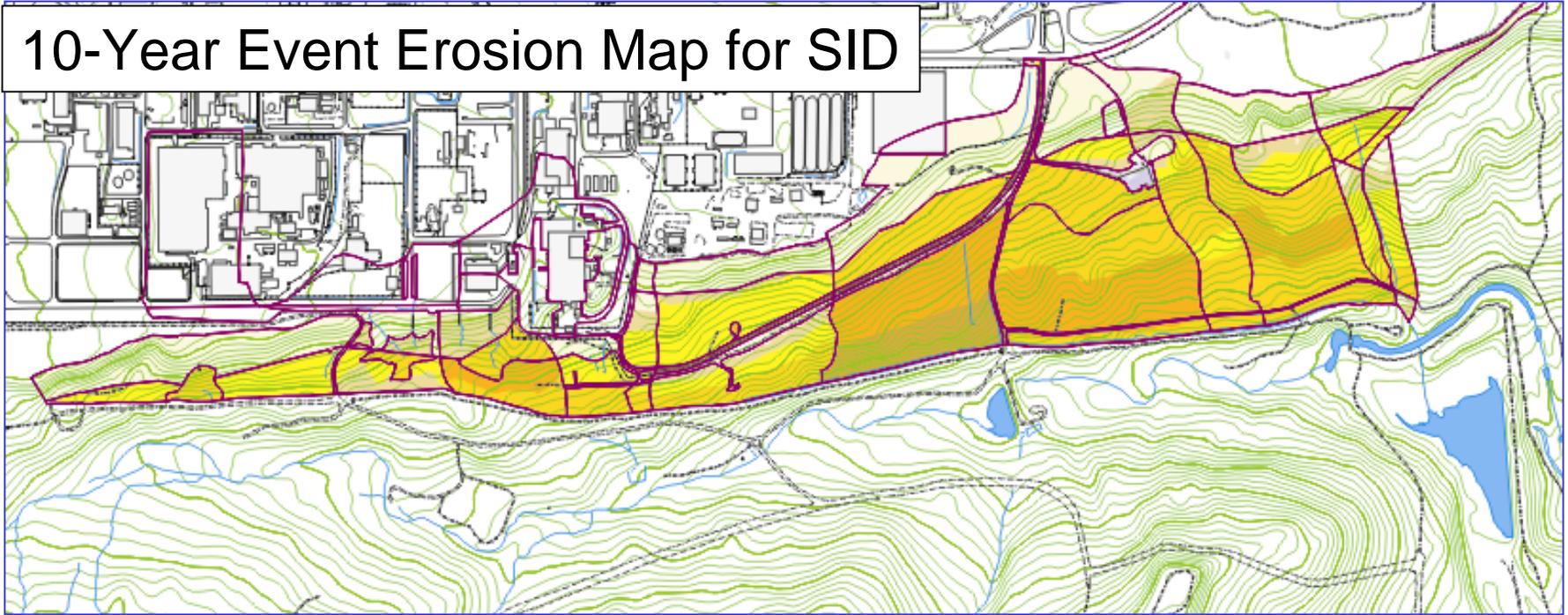
ID	Hillslope	OFE	Simulation Day	Simulation Month	Simulation Year	Rainfall	Runoff	Effective Intensity	Peak Runoff	Effectiv
1	1	1	25	6	37	97.1	59.065	70.106	81.795	
									81.368	
									81.272	
									120.902	
									70.904	
									76.207	
									75.286	
									423	
									.86	
									.97	
									795	

Hill Slope ID	Rainfall Amount	Sediment Leavin	Class	Diameter	Specific Gravity	% Sand	% Si
1	97.1	9.397	1	0.002	2.6	0	
1	97.1	9.397	2	0.01	2.65	0	

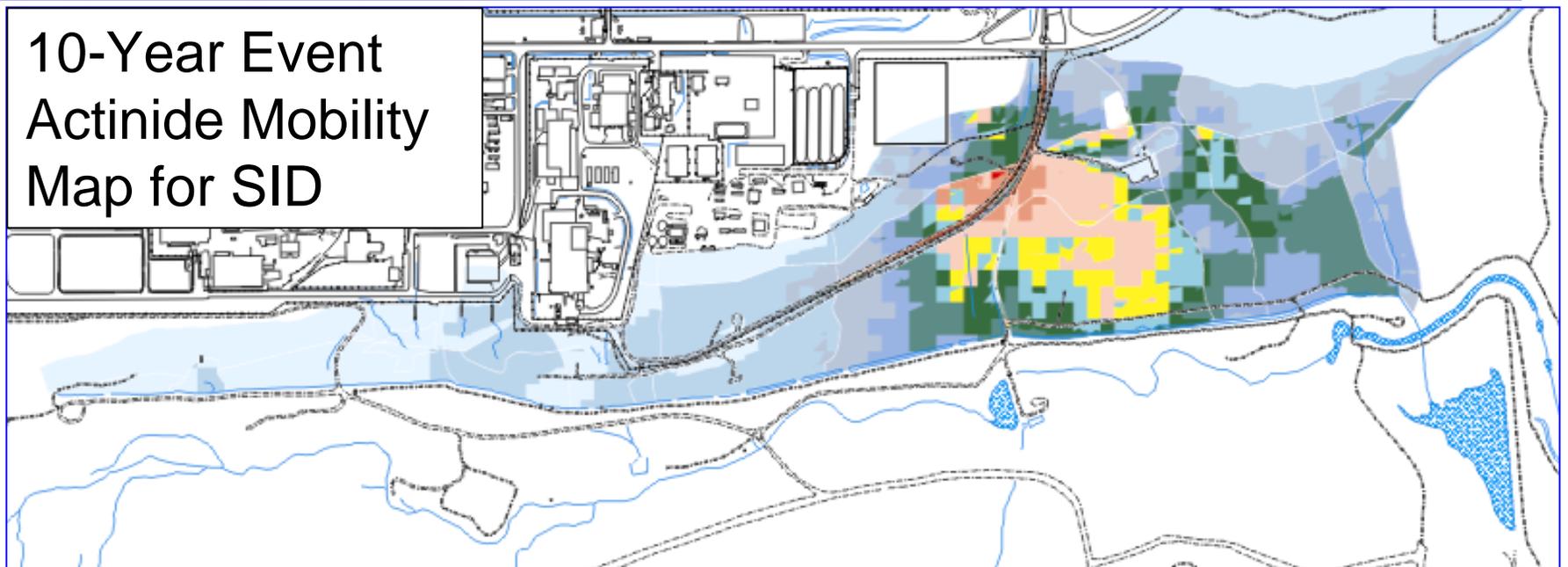
HILLSLOPE ID	MEAN ANNUAL SNOW RUNOFF	SEDIMENT (KG/M)	TOTAL SEDIMENT	PROFILE WIDTH	HILLSLOPE AREA	T/A
SID HILLSLOPE 1	1.9	5.37	1750.535	326	4.368	0.401
SID HILLSLOPE 6	17.48	56.671	226.684	4	0.052	4.326
SID HILLSLOPE 7	2.78	2.888	346.606	120	1.8	0.193
SID HILLSLOPE 9	2.48	9.851	1310.173	133	2.806	0.467
SID HILLSLOPE 10	2.65	3.327	346.044	104	1.238	0.28
SID HILLSLOPE 11	15.84	99.78	598.677	6	0.07	8.602
SID HILLSLOPE 12	2.56	16.711	635.022	38	0.855	0.743
SID HILLSLOPE 13	2.55	4.925	1398.621	284	3.664	0.382
SID HILLSLOPE 14	2.65	2.138	675.571	316	2.433	0.278
SID HILLSLOPE 15					5.005	0.88
SID HILLSLOPE 16					4.246	0.429
SID HILLSLOPE 17					0.166	2.341
SID HILLSLOPE 18	1.84	22.396	4636.058	207	8.508	0.545
sid 19 hillslope	1.95	17.815	1318.343	74	3.522	0.374
SID HILLSLOPE 20	1.62	16.454	3109.715	189	6.672	0.466
SID HILLSLOPE 22	0.19	0.085	23.303	274	12.44	0.002

WEPP Annual Summary Data

10-Year Event Erosion Map for SID



10-Year Event Actinide Mobility Map for SID



FORMAT WEPP OUTPUT FOR HEC-6T

WEPP Peak Runoff, total Runoff, Particle-Size Distribution, and Sediment Leaving Profile output data are formatted into sediment discharge records for HEC-6T in a spreadsheet using a triangular hydrograph technique.

HILLSLOPE	27					
\$LOCAL	27					
LQL	Q	-100	-0.001	0.001	0.499	0.997
LTQSD	27	0	0	0.001	0.490	0.981
LFL	CLAY	0.07	0.07	0.07	0.07	0.07
LFL	SILT1	0.02	0.02	0.02	0.02	0.02
LFL	SILT2	0.02	0.02	0.02	0.02	0.02
LFL	SILT3	0.12	0.12	0.12	0.12	0.12
LFL	SILT4	0.12	0.12	0.12	0.12	0.12
LFL	VFS	0.03	0.03	0.03	0.03	0.03
LFL	FS	0.04	0.04	0.04	0.04	0.04
LFL	MS	0.30	0.30	0.30	0.30	0.30
LFL	CS	0.29	0.29	0.29	0.29	0.29
HILLSLOPE	26					
\$LOCAL	26					
LQL	Q	-100	-0.001	0.001	3.046	6.091
LTQSD	26	0	0	0.001	3.120	6.241
LFL	CLAY	0.03	0.03	0.03	0.07	0.07
LFL	SILT1	0.00	0.00	0.00	0.02	0.02
LFL	SILT2	0.00	0.00	0.00	0.02	0.02
LFL	SILT3	0.03	0.03	0.03	0.12	0.12
LFL	SILT4	0.03	0.03	0.03	0.12	0.12
LFL	VFS	0.23	0.23	0.23	0.03	0.03
LFL	FS	0.23	0.23	0.23	0.03	0.03
LFL	MS	0.45	0.45	0.45	0.30	0.30
LFL	CS	0.00	0.00	0.00	0.29	0.29
HILLSLOPE	20					
\$LOCAL	20					
LQL	Q	-100	-0.001	0.001	0.814	1.628
LTQSD	20	0	0	0.001	4.002	8.003
LFL	CLAY	0.11	0.11	0.11	0.11	0.11
LFL	SILT1	0.02	0.02	0.02	0.02	0.02
LFL	SILT2	0.02	0.02	0.02	0.02	0.02
LFL	SILT3	0.19	0.19	0.19	0.19	0.19
LFL	SILT4	0.17	0.17	0.17	0.17	0.17
LFL	VFS	0.01	0.01	0.01	0.01	0.01
LFL	FS	0.01	0.01	0.01	0.01	0.01
LFL	MS	0.24	0.24	0.24	0.24	0.24
LFL	CS	0.23	0.23	0.23	0.23	0.23

Actinide Transport Model Spreadsheet

TABLE VOL-2. ACCUMULATED WEIGHT BY SIZE CLASS.

: VF : F : M : C : VC :

INFLOW

CLAY : .327600E-20:

SILT : .327600E-20: .327600E-20: .327600E-20: .327600E-20:

SAND : .327600E-20: .327600E-20: .327600E-20: .327600E-20:

RIVER MILE = 100.000

CLAY : .327353E-20:

SILT : .327600E-20: .327600E-20: .327600E-20: .327600E-20:

SAND : .101950E-22: .000000 : .000000 : .000000 :

RIVER MILE = 117.000

HEC-6T .t6 file
output is parsed into
spreadsheet.



Accumulated Weight Size by Class (Units = short tons= 2000 lbs./s.t. = 907.2 KG/s.t.)					Station #
	Very Fine	Fine	Medium	Coarse	(Paste in this Col.)
INFLOW					INFLOW
CLAY	3.28E-21				
SILT	3.28E-21	3.28E-21	3.28E-21	3.28E-21	
SAND	3.28E-21	3.28E-21	3.28E-21	3.28E-21	
RIVER MILE					100
CLAY	3.24E-21				
SILT	3.28E-21	3.28E-21	3.28E-21	3.28E-21	
SAND	0	0	0	0	
RIVER MILE					117
CLAY	3.20E-21				

- (1) Set Datatext to columns to use "-" sign as delimiter
- (2) Paste data from HEC6T "Table Vol-2" output into cell A7)
- (3) Paste station #'s from Column I (values only) into column H.
- (4) Highlight all data in Column A, Use Datatext to columns ":" as delimiter
- (5) Copy data from this sheet (cells A7 thru H540) to cell M5 in Sheet B_HEC6 Se Formatted

Actinide Transport Model Spreadsheet

TABLE SB-3. NETWORK SEGMENT NO 1
 SOUTH INTERCEPTOR DITCH FILE NAME: SID10yrQ.TXT
 ACCUMULATED INFLOWING WATER DISCHARGE FROM DAY ZERO (ACRE FEET)

SEGMENT #	1	LOCAL #1	LOCAL #2	LOCAL #3	LOCAL #4	LOCAL #5
		LOCAL # 6	LOCAL # 7	LOCAL # 8	LOCAL # 9	LOCAL #10
		LOCAL #11	LOCAL #12	LOCAL #13	LOCAL #14	LOCAL #15
		LOCAL #16	LOCAL #17	LOCAL #18	LOCAL #19	
0.649785E-01	0.232193E-01	1.94282	1.09602	0.580265	1.49911	
	0.502644E-01	1.50662	1.19346	0.660046	1.01304	
	0.175091	0.270288E-01	1.18634	0.334798	0.664404	
	0.401471	0.556233	1.91947	0.904542		

EVENT DURATION(DAYS) = 0.1200E-02

RESIDENT TIME BY SEGMENT.

SEGMENT

NUMBER TIME(DAYS)

1 0.7681

Table SB-3 water yields from HEC-6T .t6 output file are parsed into spreadsheet.



HEC6T - "Table SB-3" Data Dump - for the South Interceptor Ditch Segment 1											
Note: First find "Table Vol-1" in HECAT *.t6 file, then go "back" in file to find "Table SB-3" (final time step)											
(1) Paste "Table SB-3" data into Cell A7											
Accumulated Inflowing Water Discharge From Day 0 (acre-feet)						format					
6.50E-02	2.32E-02	1.94E+00	1.10E+00	5.80E-01	1.50E+00	inflow	local 1	local 2	local 3	4	5
	5.03E-02	1.51E+00	1.19E+00	6.60E-01	1.01E+00		6	7	8	9	10
	1.75E-01	2.70E-02	1.19E+00	3.35E-01	6.64E-01		11	12	13	14	15
	4.01E-01	5.56E-01	1.92E+00	9.05E-01			16	17	18	19	

Actinide Transport Model Spreadsheet

Actinide loading is calculated for each HEC-6T cross section for each particle size.

Plutonium Loading - South Interceptor Ditch - By Reach - (pCi)														Plutonium Loading - South Interceptor Ditch - By Reach - (pCi)													
Segment	Station In	Station Out	Input Module	Hillslope Number	Clay Very Fine	Silt Very Fine	Silt Fine	Silt Medium	Silt Coarse	Sand Very Fine	Sand Fine	Sand Medium	Sand Coarse	Total pCi of Pu													
1	Inflow	100	Reach In (No Segment Upstream)		0.000	0.000	0.000	0.000	0.000	0.000	0.000	0.000	0.000	0.000													
			Channel Deposition (-) or Erosion (+)		0.000	0.000	0.000	0.000	0.000	0.000	0.000	0.000	0.000	0.000													
			Reach Out		0.000	0.000	0.000	0.000	0.000	0.000	0.000	0.000	0.000	0.000													
1	100	117	Reach In		0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00													
			Channel Deposition (-) or Erosion (+)		0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00													
			Reach Out		0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00													



1	7448	7508	Reach In		78047418.54	13311548.09	11482010.30	9938041.82	2647711.66	123758711.62	59482204.73	54857987.01	16923388.97	
			Hillslope	21	0.000	0.000	0.000	0.000	0.000	0.000	0.000	0.000	0.000	
			Hillslope	22	0.000	0.000	0.000	0.000	0.000	0.000	0.000	0.000	0.000	
			Hillslope	23	1376951.633	242991.465	364487.197	2450163.935	2308418.914	789722.260	971965.868	5892543.017	6852044.439	
			Hillslope	25	322819.537	59107.803	86300.327	569250.748	527423.470	168229.900	168229.900	1360385.952	1304918.412	
			Hillslope	26	491069.397	89914.115	124496.467	836892.915	809227.034	255909.404	297408.226	2047275.231	1964277.586	
			Channel Deposition (-) or Erosion (+)		-1255163.40	-258806.99	-286331.88	-1697842.08	-1382361.32	-1807336.39	-2920725.10	-6731699.61	-3774828.37	
			Reach Out (from HEC)		78983095.71	13444755.48	11791050.42	11886507.34	4910419.76	123165236.79	57999083.61	57416491.59	22269801.03	381866441.744
1	7508	7525	Reach In		78983095.71	13444755.48	11791050.42	11886507.34	4910419.76	123165236.79	57999083.61	57416491.59	22269801.03	
			Hillslope	27	14918.333	3151.760	3151.760	25634.318	25634.318	6723.756	8194.577	61984.621	60723.917	
			Channel Deposition (-) or Erosion (+)		-45007.69	-16983.19	-65535.25	-939819.77	-137294.30	-36666.91	-48062.12	-148025.76	-69592.40	
			Reach Out (from HEC)		78953006.35	13430924.05	11728666.93	10972321.89	4798759.78	123136393.64	57969216.07	57330460.46	22240932.55	380545671.708
1	7525	7627	Reach In		78953006.35	13430924.05	11728666.93	10972321.89	4798759.78	123136393.64	57969216.07	57330460.46	22240932.55	
			Channel Deposition (-) or Erosion (+)		0.00	0.00	0.00	0.00	0.00	-1040.36	-752.96	0.00	-28.04	
			Reach Out (from HEC)		78953006.35	13430924.05	11728666.93	10972321.89	4798759.78	123133553.28	57968463.11	57330460.46	22240904.51	380547050.360

Actinide Transport Model Spreadsheet

Actinide concentrations are calculated for each HEC-6T cross section.

South Interceptor Ditch - Plutonium and Americium Activity in Water (pCi/L) - Concentration Calculation By Reach

Storm Event: **10 Year**

	Station	Station	Station	Water Vol. In (L)	Water Vol. In (L)	Pu Load (pCi)	Channel	Am Concen (pCi/L)	Channel
Segment	In	Out (ft)	Out (m)	Reach	Cumulative	Cumulative Load @ downstream end	Pu Concen (pCi/L)	Cumulative Load @ downstream end	Am Concen (pCi/L)
1		0	0	80147.7	80147.7	2.9224E-15	0.000	8.555E-16	0.000
1	Inflow	100	30.48	0.0	80147.7	0.000	0.000	0.000	0.000
1	100	117	35.6616	0.0	80147.7	0.000	0.000	0.000	0.000
1	117	122	37.1856	0.0	80147.7	0.000	0.000	0.000	0.000
1	122	195	59.436	0.0	80147.7	0.000	0.000	0.000	0.000

1	6960	7005	2135.124	0.0	15710649.3	405676639.6	25.822	60450517.97	3.848
1	7005	7095	2162.556	0.0	15710649.3	404106783.9	25.722	60217175.16	3.833
1	7095	7185	2189.988	1351885.6	17062534.9	459545700	26.933	69826714.53	4.092
1	7185	7275	2217.42	0.0	17062534.9	452358160.2	26.512	68698480.41	4.026
1	7275	7280	2218.944	0.0	17062534.9	447209230.6	26.210	67898632.2	3.979
1	7280	7368	2245.7664	0.0	17062534.9	382800944.2	22.435	57961320.01	3.397
1	7368	7373	2247.2904	0.0	17062534.9	372441616.8	21.828	56339928.44	3.302
1	7373	7417	2260.7016	0.0	17062534.9	370853349.3	21.735	56090835.3	3.287
1	7417	7422	2262.2256	0.0	17062534.9	3.71E+08	21.728	56073709.41	3.286
1	7422	7448	2270.1504	0.0	17062534.9	3.70E+08	21.711	56028031.65	3.284
1	7448	7508	2288.4384	2396370.9	19458905.8	3.82E+08	19.624	57839721.02	2.972
1	7508	7525	2293.62	28639.8	19487545.7	3.81E+08	19.528	57637434.42	2.958
1	7525	7627	2324.7096	0.0	19487545.7	3.81E+08	19.528	57637040.47	2.958