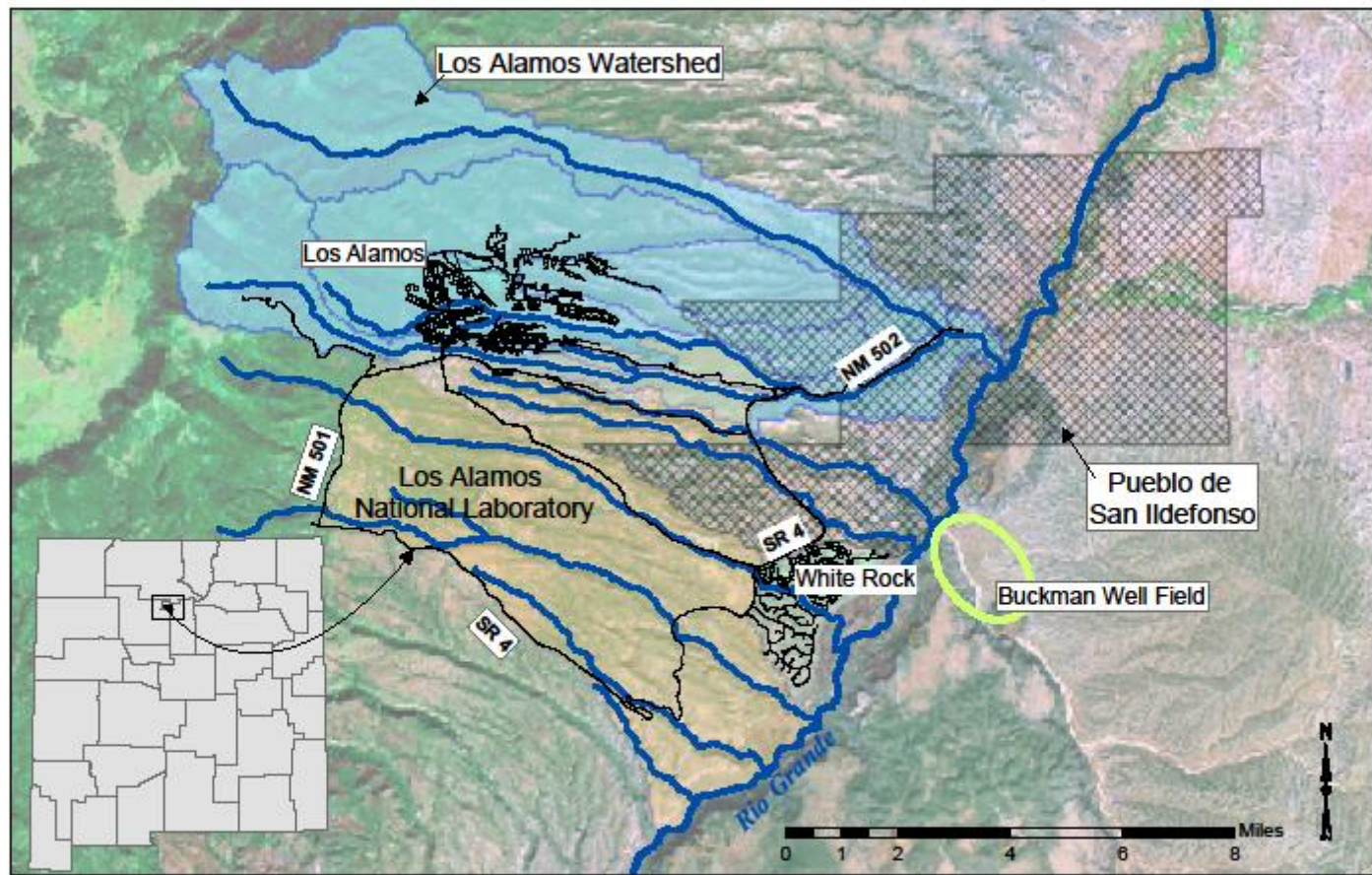
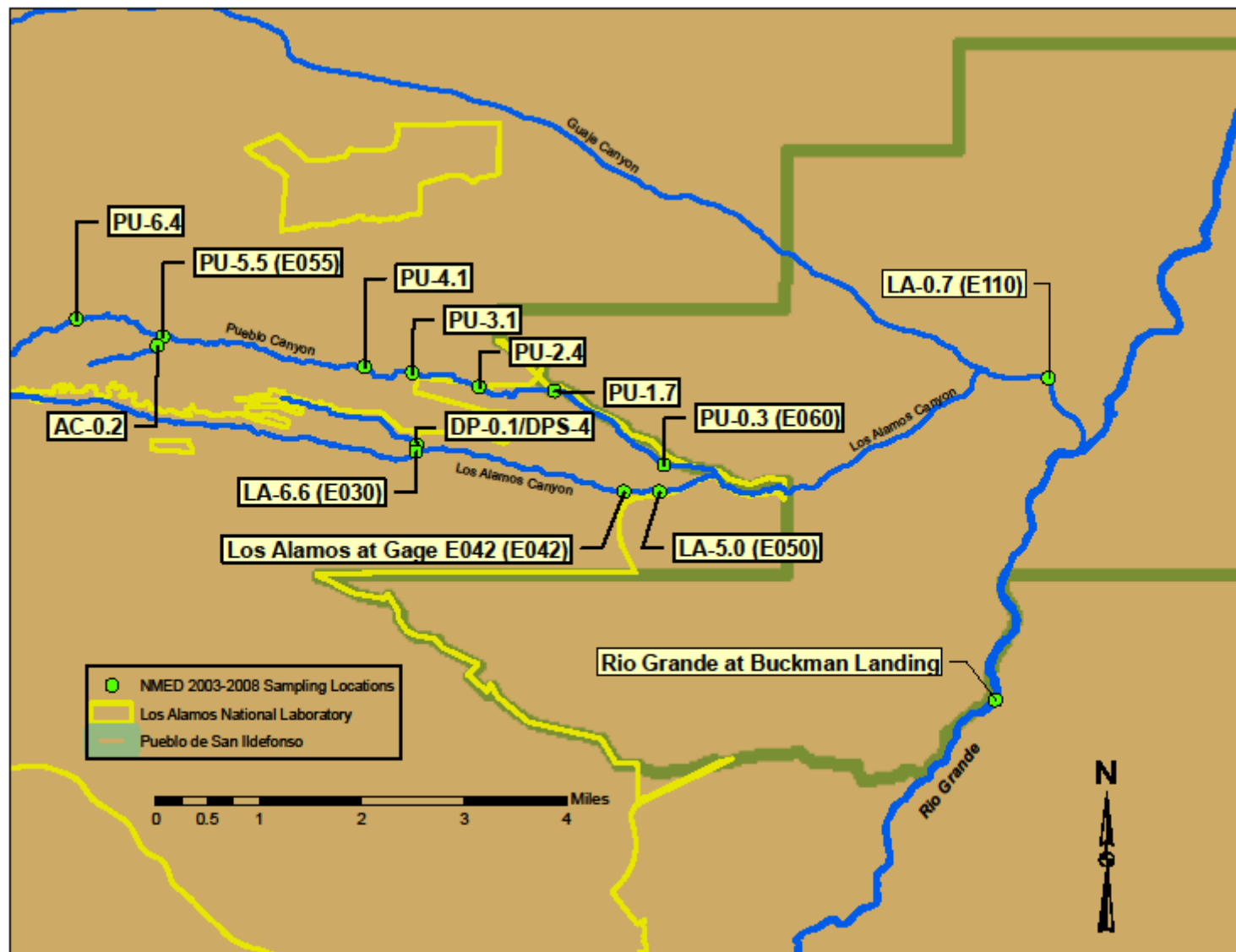


Storm water monitoring in Los Alamos Canyon Watershed

What we did????



Regional Setting of Los Alamos National Laboratory



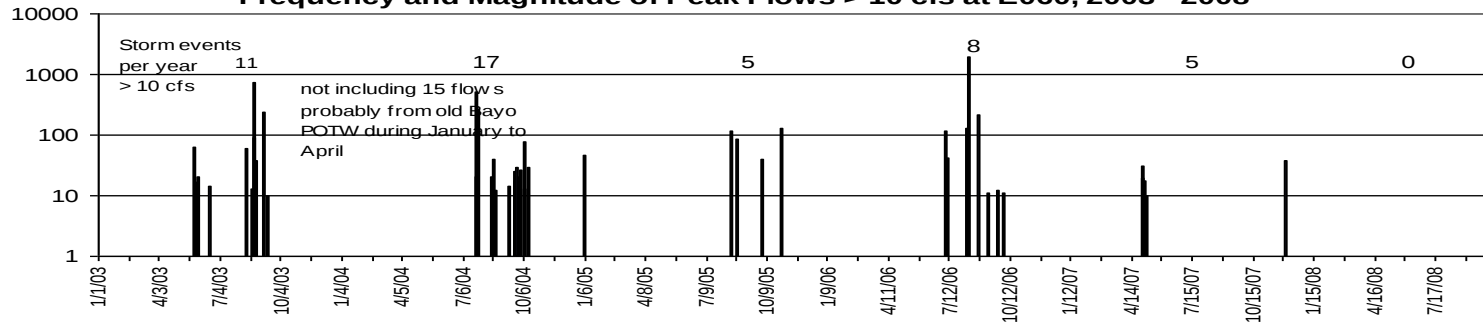
during the 2003 to 2008 period of this report

- 182 milli Curries (mCi) of plutonium^{239/240} has been transported out of Pueblo Canyon into lower Los Alamos Canyon
- 1 mCi has been transported out of mid Los Alamos Canyon into lower Los Alamos Canyon
- 34 mCi of plutonium^{239/240} has been transported to the Rio Grande
- Laboratory contaminants were carried off site in 19000 tons of suspended sediments, of which 7500 tons entered the Rio Grande

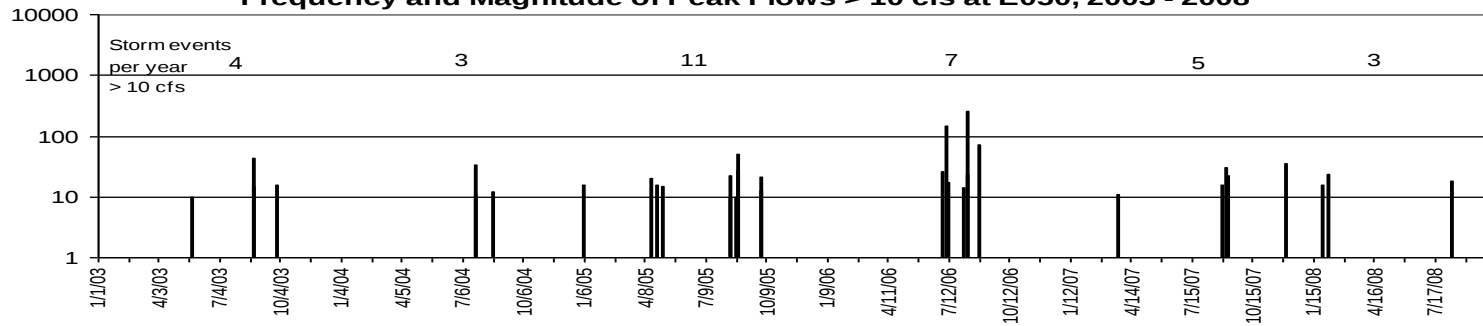
since the 2000 Cerro Grande fire

- approximately 246 mCi of plutonium^{239/240} in 35543 tons of suspended sediment have been transported out of Pueblo Canyon

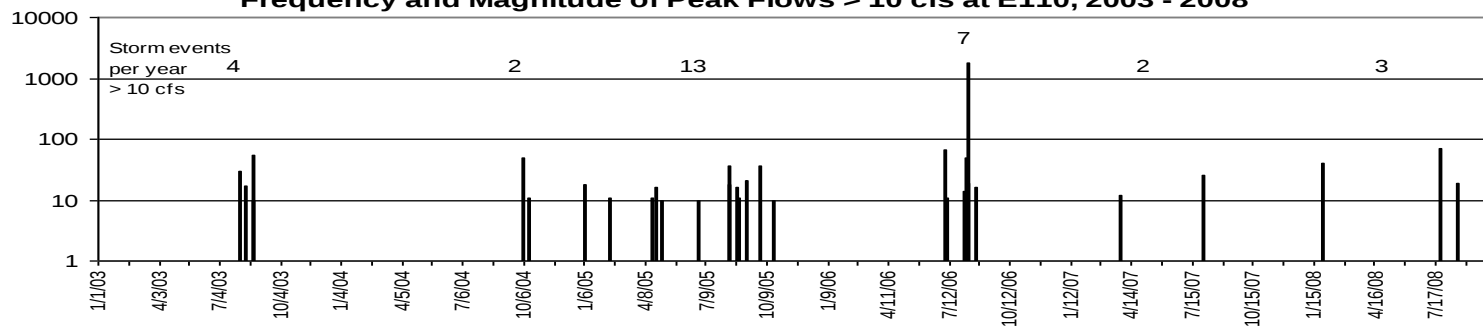
Frequency and Magnitude of Peak Flows > 10 cfs at E060, 2003 - 2008



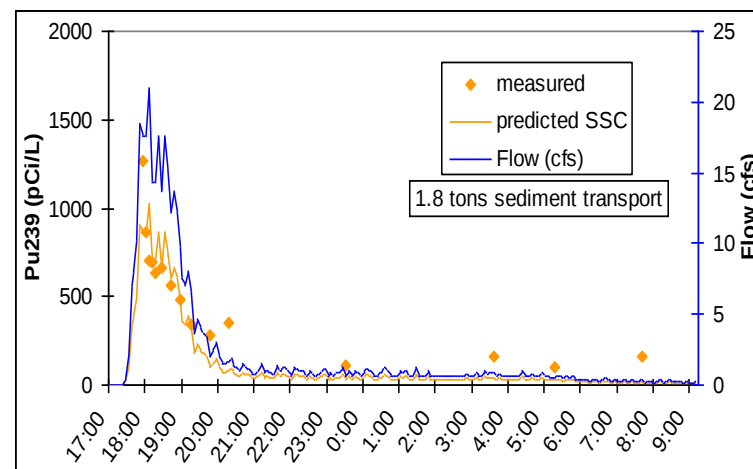
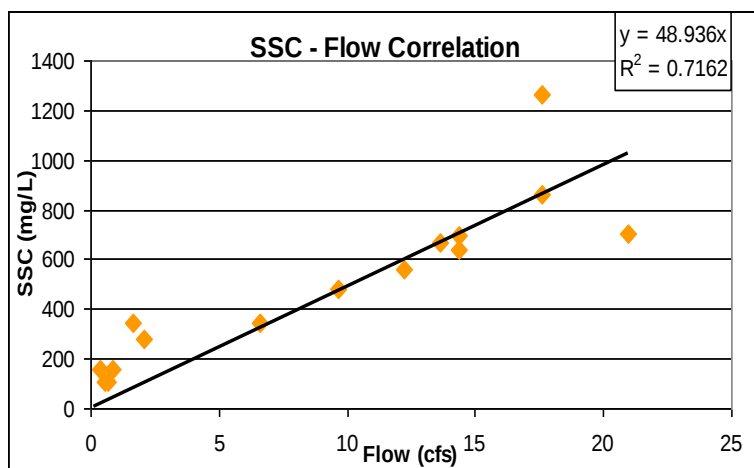
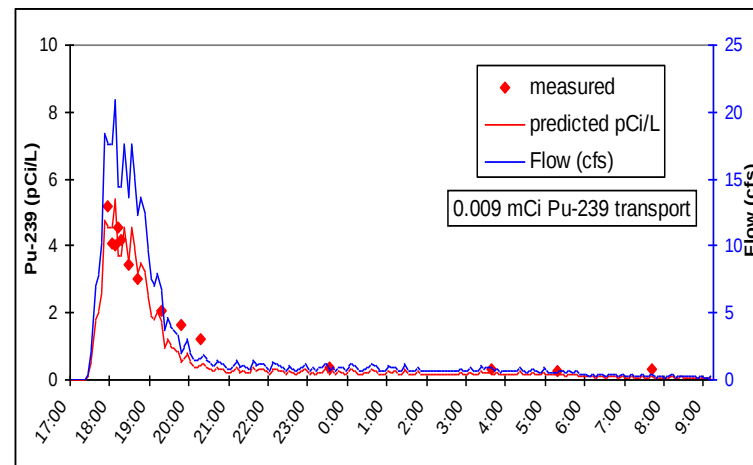
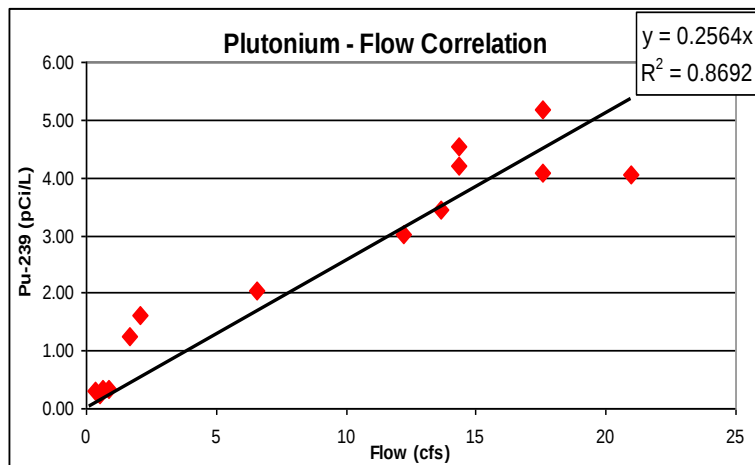
Frequency and Magnitude of Peak Flows > 10 cfs at E050, 2003 - 2008



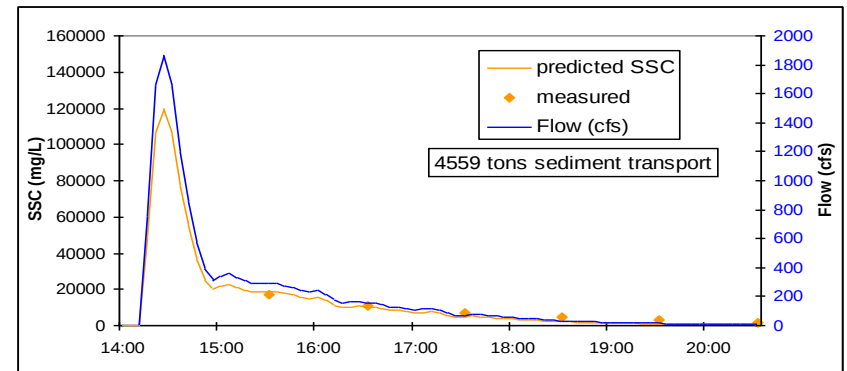
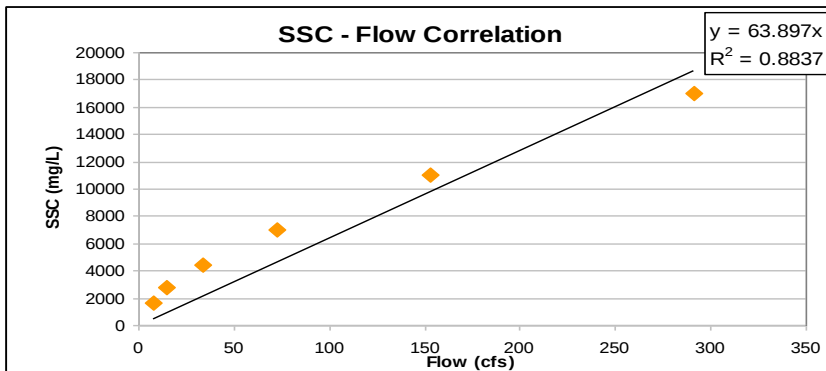
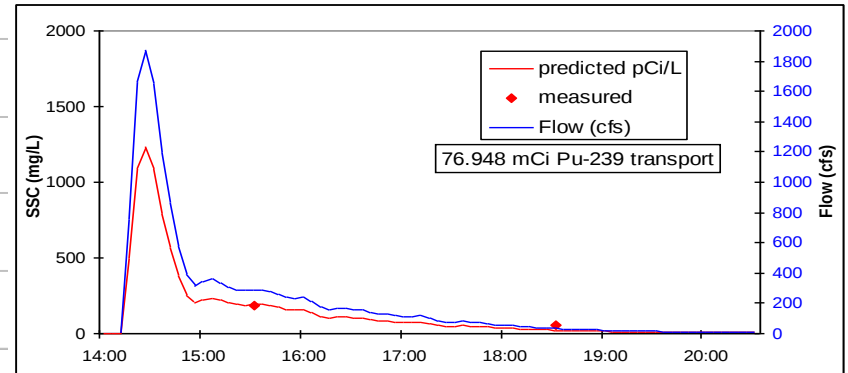
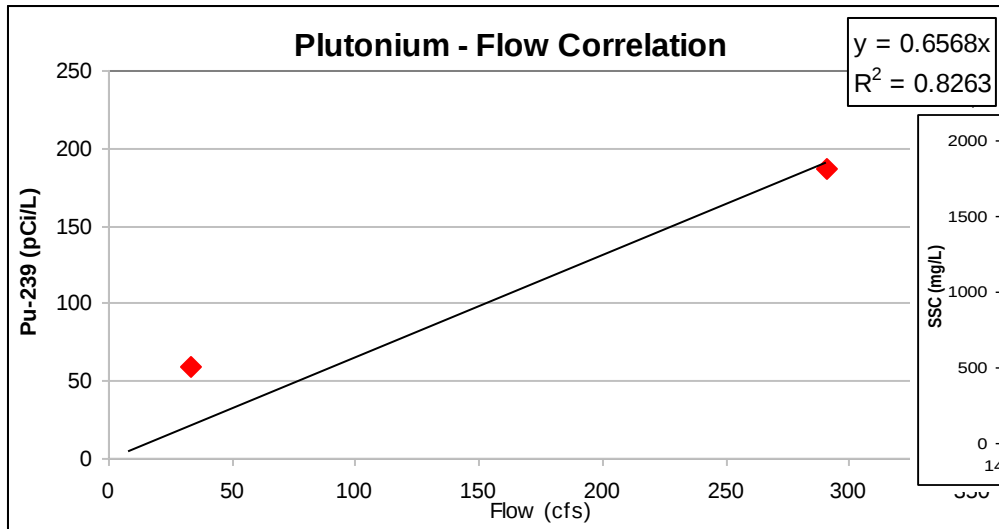
Frequency and Magnitude of Peak Flows > 10 cfs at E110, 2003 - 2008



8/18/2004 E060 21cfs

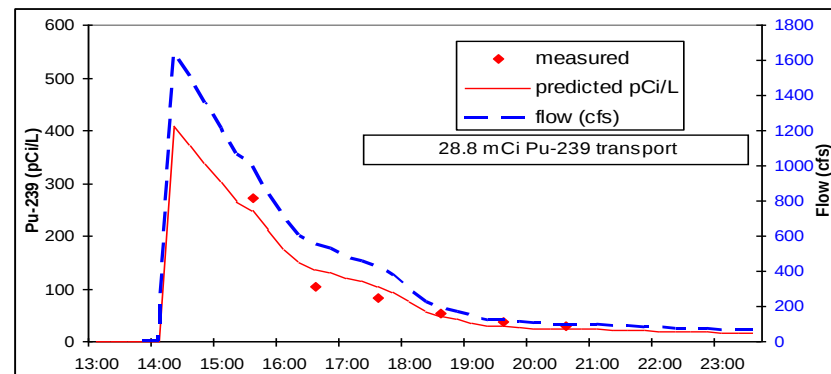
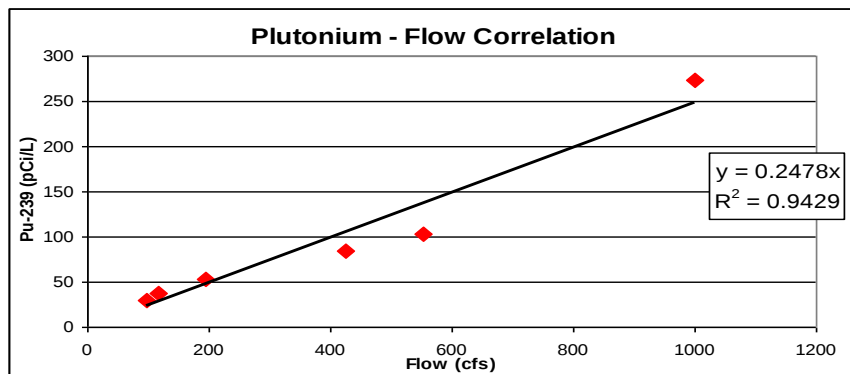


8/8/2006 E060 1930 cfs

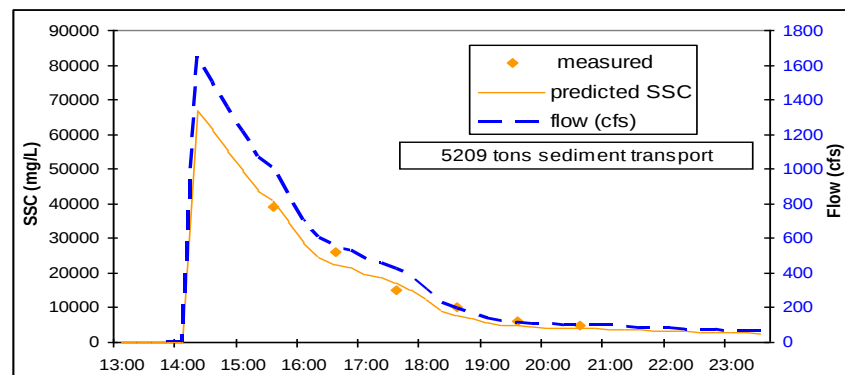
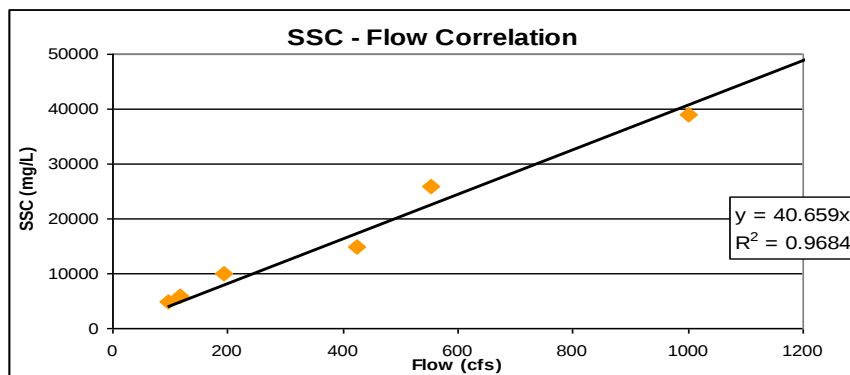


8/8/2006 1642 (1749?) cfs E110

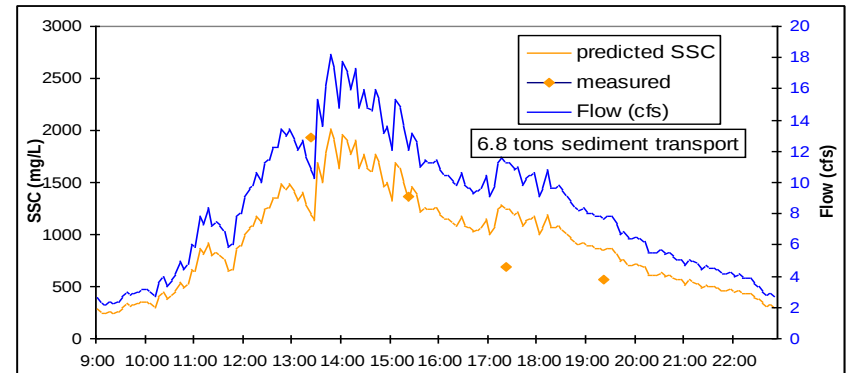
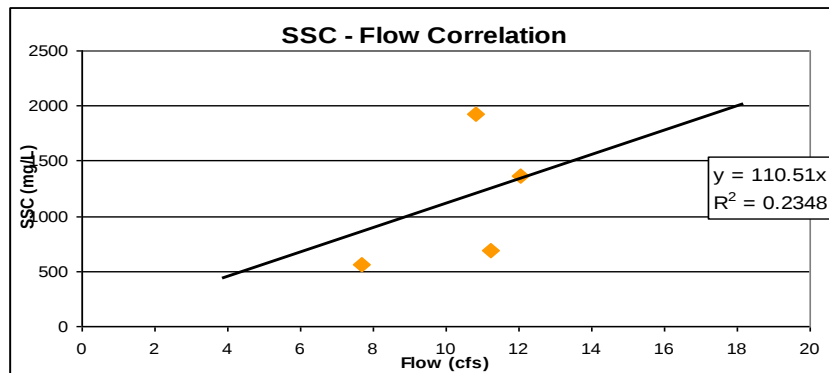
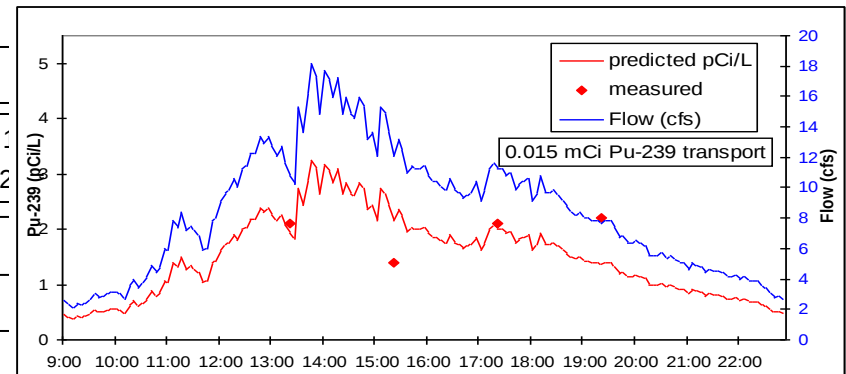
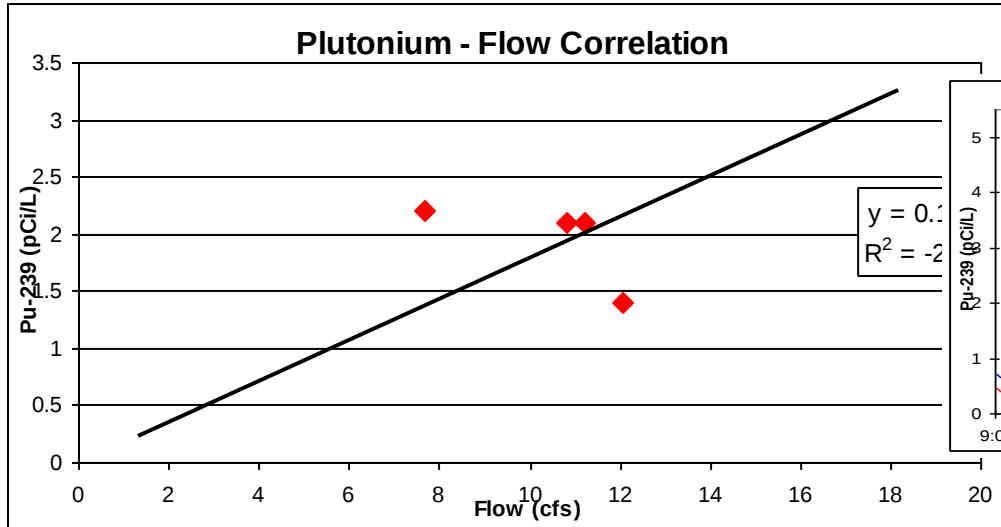
Plutonium (pCi/L) – Flow Relationships (cfs)



Sediment (SSC in mg/L) – Flow Relationships (cfs)



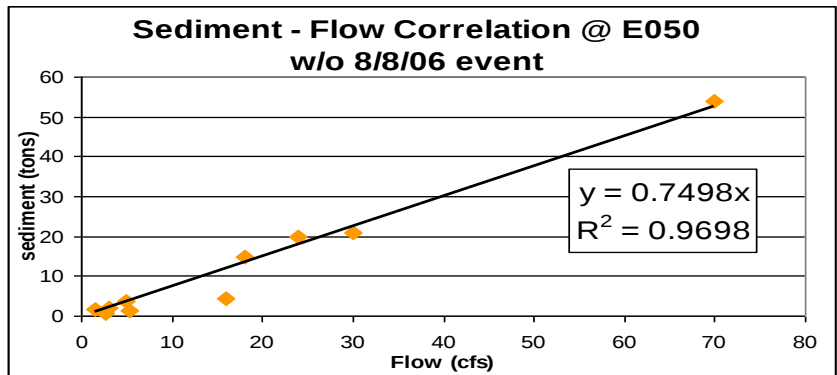
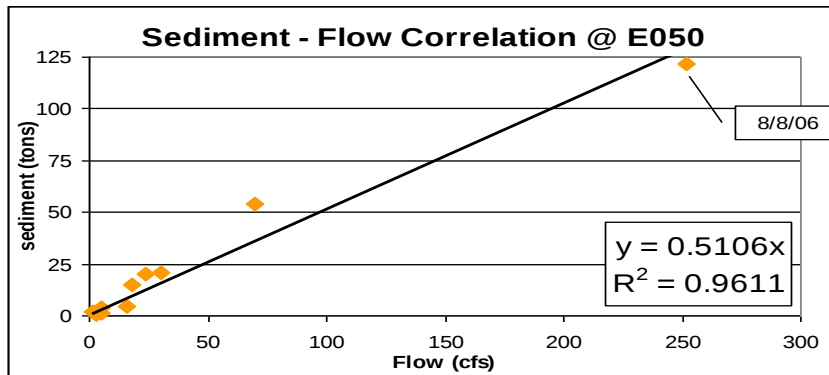
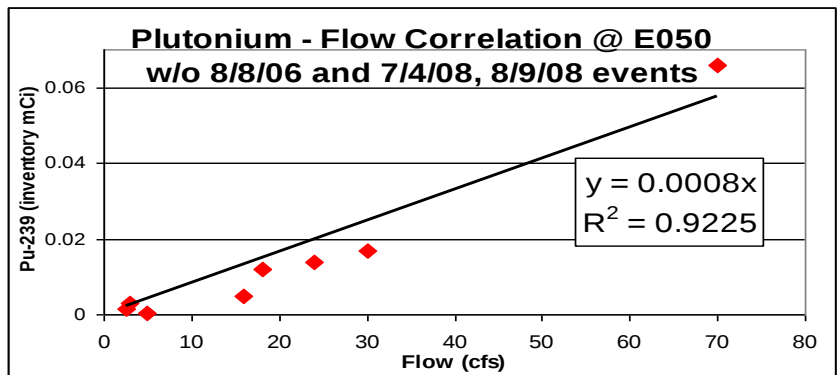
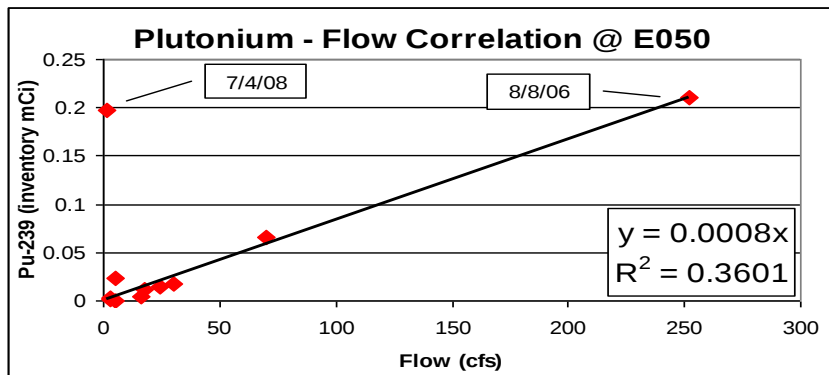
8/12/2005 E110 18 cfs



Plutonium and Sediment Transport Evaluations for Each Sampled Event

Station	Date	Peak Flow (cfs)	Plutonium (mCi)	Sediment (tons)
E055	8/25/2006	45	0.0015	50
E055	7/14/2007	0.7	0.0000053	0.2
E055	7/26/2007	21	0.00036	7.7
E055	8/4/2007	0.9	0.0000054	0.1
E055	9/1/2007	4.2	0.0000259	1
E030	8/12/2005	11	0.009	7
E030	8/13/2005	7	0.004	3
E030	8/22/2005	5	0.004	3.5
E030	8/24/2005	27	0.029	23
E042	8/12/2005	70	0.172	232
E042	8/12/2005	135	0.137	184
E050	8/1/2006	16	0.005	4.5
E050	8/7/2006	24	0.014	20
E050	8/8/2006	252	0.21	122
E050	8/6/2007	5	0.0003	3.8
E050	8/29/2007	18	0.012	15
E050	9/1/2007	3	0.003	1.9
E050	9/2/2007	30	0.017	21
E050	7/4/2008	1.5	0.1977	1.7
E050	8/9/2008	5.3	0.0233	1.5
E050	8/23/2008	2.7	0.0015	0.8

Station	Date	Peak Flow (cfs)	Plutonium (mCi)	Sediment (tons)
E060	8/12/2003	60	0.314	99
E060	8/22/2003	90	0.03	158
E060	9/6/2003	243	4.25	1345
E060	7/23/2004	21	0.015	3
E060	7/27/2004	262	1.28	171
E060	8/18/2004	21	0.009	2
E060	8/20/2004	40	0.015	15
E060	8/24/2005	85	0.39	207
E060	7/26/2006	2	0.00013	1.05
E060	8/5/2006	1	0.00043	0.06
E060	8/8/2006	1926	76.95	4559
E060	8/25/2006	102	1.273	125
E060	8/6/2007	4	0.0007	4
E110	8/12/2005	18	0.0063	7
E110	8/24/2005	16	0.041	2
E110	8/25/2005	11	0.015	7
E110	7/6/2006	9	0.0004	7
E110	7/6/2006	11	0.003	8
E110	8/6/2006	49	0.007	20
E110	8/8/2006	1642	28.8	5209
E110	8/19/2006	16	0.004	14
E110	8/25/2006	89	1.17	368
E110	7/22/2008	69	0.005	64



Plutonium and Suspended Sediment Transport for E050 from 2003 - 2008

Date	Peak Flow (cfs)	Plutonium transport (mCi)	Sediment transport (tons) using 0.51 coefficient	Sediment transport (tons) using 0.75 coefficient	Date	Peak Flow (cfs)	Plutonium transport (mCi)	Sediment transport (tons) using 0.51 coefficient	Sediment transport (tons) using 0.75 coefficient
8/23/08	2.7	0.0015	1	1	6/29/06	26	0.0208	13	19
8/10/08	18	0.0144	9	13	9/29/05	21	0.0168	11	16
8/9/08	5.3	0.0233	2	2	9/28/05	13	0.0104	7	10
7/4/08	1.5	0.1977	2	2	8/25/05	28	0.0224	14	21
2/4/08	23	0.0184	12	17	8/24/05	51	0.0408	26	38
1/28/08	16	0.0128	8	12	8/22/05	10	0.008	5	7
12/1/07	35	0.028	18	26	8/13/05	10	0.008	5	7
9/6/07	22	0.0176	11	16	8/12/05	22	0.0176	11	16
9/2/07	30	0.017	21	21	5/3/05	15	0.012	8	11
9/1/07	3	0.003	2	2	4/24/05	16	0.0128	8	12
8/29/07	18	0.012	15	15	4/16/05	20	0.016	10	15
8/6/07	5	0.0003	4	4	1/4/05	16	0.0128	8	12
3/23/07	11	0.0088	6	8	8/20/04	12	0.0096	6	9
8/25/06	72	0.0576	37	54	7/24/04	34	0.0272	17	25
8/8/06	252	0.21	122	122	7/23/04	11	0.0088	6	8
8/7/06	24	0.014	20	20	9/26/03	16	0.0128	8	12
8/1/06	16	0.005	5	5	8/23/03	43	0.0344	22	32
7/9/06	17	0.0136	9	13	8/22/03	15	0.012	8	11
7/5/06	148	0.1184	76	111	5/20/03	10	0.008	5	7
sum						38	1.08	576	755

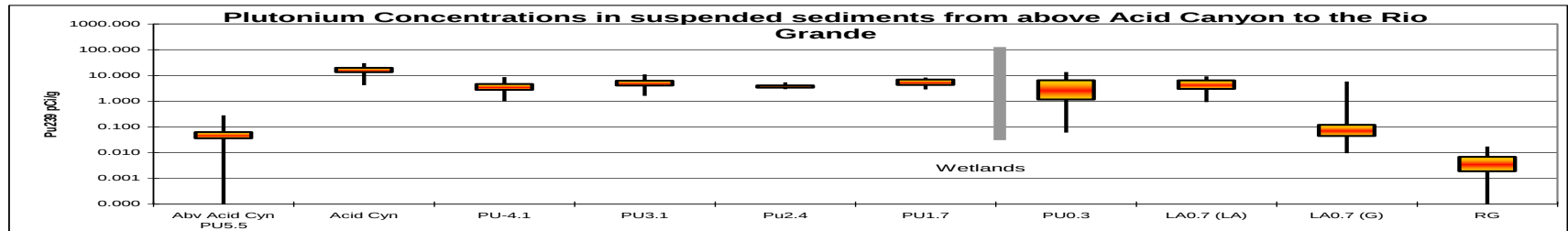
Measured events in red

Plutonium and Sediment Transport Rating-Curve Summary

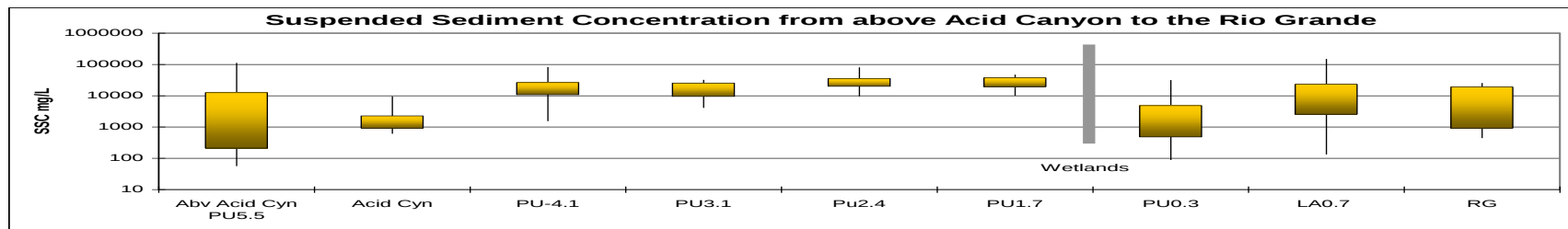
Station	E030	E042	E050	E055	E060	E110
flow count	16	58	33	31	48	33
max pu inventory (mCi)	0.32	3.21	1.08	0.13	182	34.4
min pu inventory (mCi)					134	
max factor	0.001	0.0013	0.0008	0.00003	0.037	0.018
min factor					0.019	0.00005*
max Sediment inventory (tons)	255	4384	755	4182	19348	7548
min Sediment inventory (tons)			576		13848	6119
max factor	0.80	1.78	0.75	0.98	4.78	3.17
min factor			0.51		2.71	0.72
Gross calculation of plutonium in sediments based on total tranported sediments and plutonium						
Station	E030	E042	E050	E055	E060	E110
pCi/g	1.38	0.81	1.20	0.03	8.01	5.02
						0.28*

*based on projected plutonium and sediment transport from Guaje Canyon

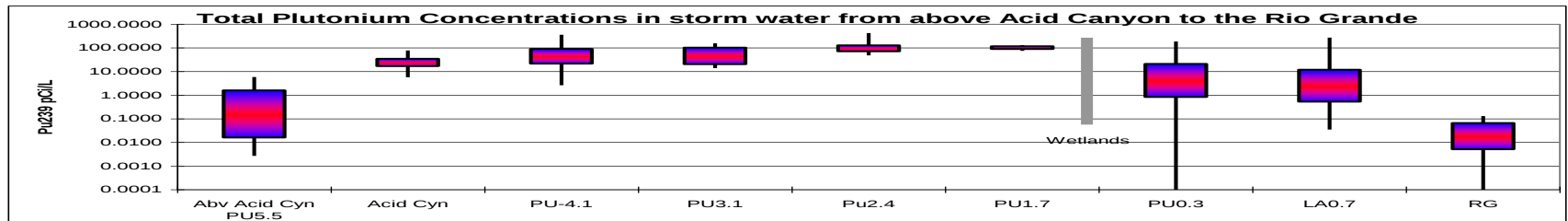
Difference through Pueblo Canyon to the Rio Grande



	Abv Acid Cyn PU5.5	Acid Cyn	PU-4.1	PU3.1	Pu2.4	PU1.7	Wetlands	PU0.3	LA0.7 (LA)	LA0.7 (G)	RG
25th	0.036	13.25	2.73	4.00	3.34	4.22		1.15	2.95	0.04	0.002
Max	0.281	30	8.60	11.00	5.35	8.30		13.50	9.20	5.77	0.017
Min	0.000	4.2	0.99	1.60	2.93	2.86		0.06	0.92	0.01	0.000
75th	0.063	19.75	4.63	6.20	4.08	6.94		6.48	6.44	0.12	0.007
count	20	14	25	9	19	2		78	20	33	9
ave	0.06	16.77	3.72	5.50	3.79	5.58		4.46	4.64	0.27	0.006



	Abv Acid Cyn PU5.5	Acid Cyn	PU-4.1	PU3.1	Pu2.4	PU1.7	Wetlands	PU0.3	LA0.7	RG
25th	209	909	10679	9401	19824	19167		478	2545	910
Max	110000	9290	81128	31613	79245	46078		31000	147147	25000
Min	57	616	1559	4167	9705	10196		89	135	450
75th	12450	2261	26200	25502	35456	37108		4814	23092	19000
count	20	14	23	8	17	2		80	57	9
ave	17752	2101	21524	16401	29842	28137		4023	18596	8493



	Abv Acid Cyn PU5.5	Acid Cyn	PU-4.1	PU3.1	Pu2.4	PU1.7	Wetlands	PU0.3	LA0.7	RG
25th	0.0160	17	21.50	20.25	71.17	89.20		0.83	0.527	0.005
Max	5.8300	78	359.06	155.79	423.96	131.78		187.00	273.000	0.130
Min	0.0027	6	2.62	14.00	48.04	75.00		0.00	0.035	0.000
75th	1.6000	35	90.55	102.50	128.00	117.59		21.00	11.960	0.066
count	21	14	23	8	17	2		77	57	9
ave	1.02	28.96	73.71	63.60	118.84	103.39		15.38	18.90	0.041

Difference through Mid Los Alamos Canyon to the Rio Grande

