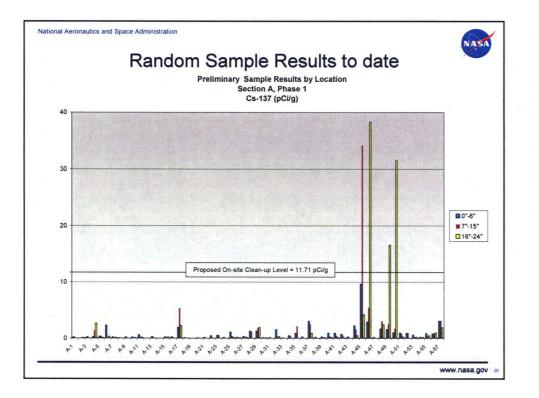
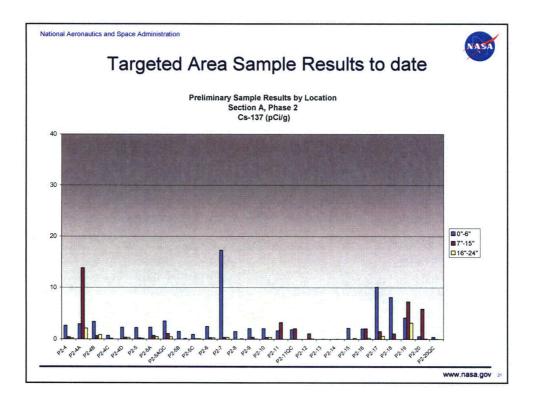


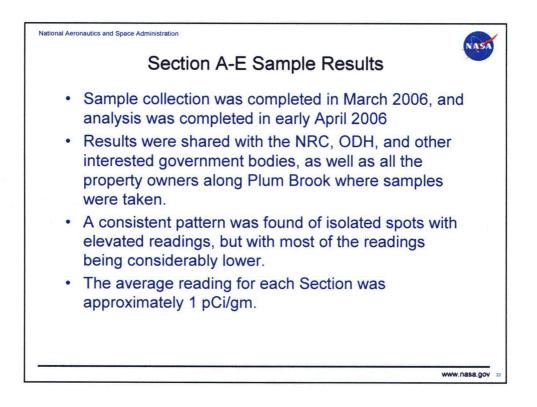
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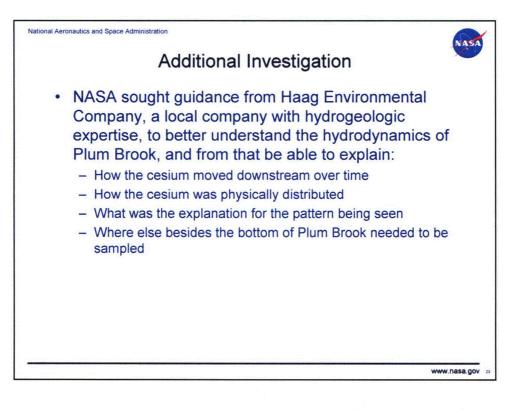


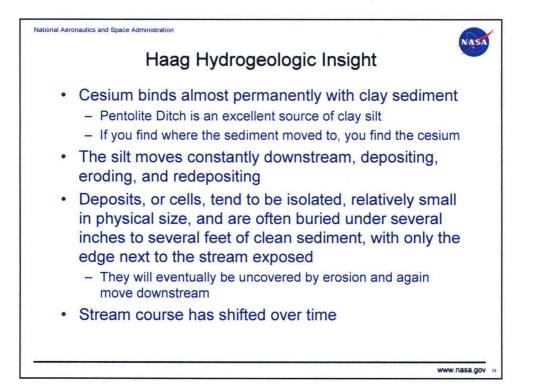


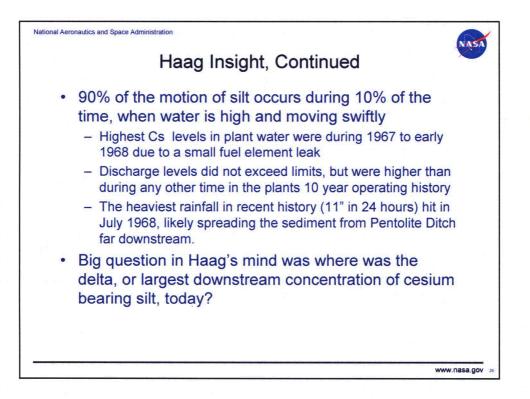


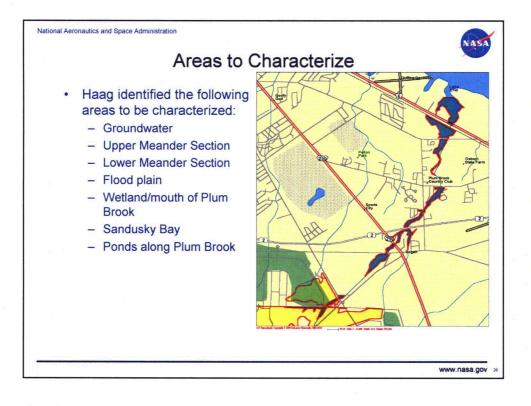


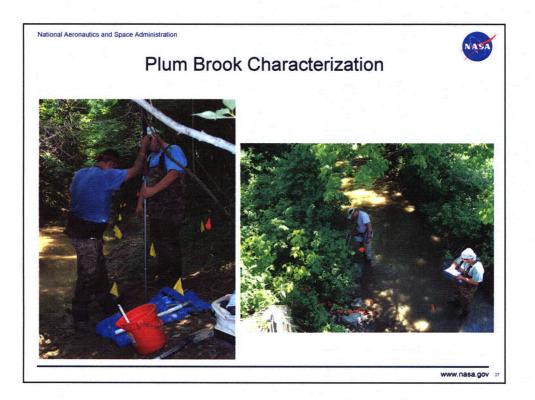


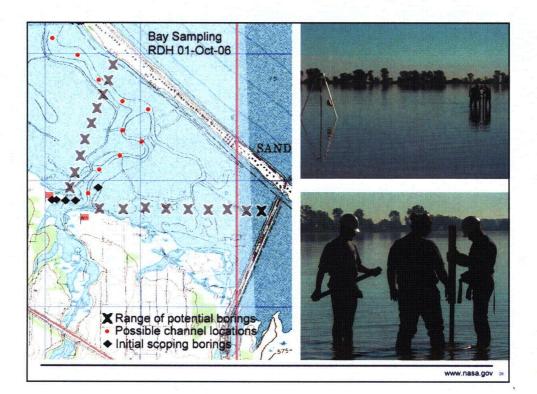




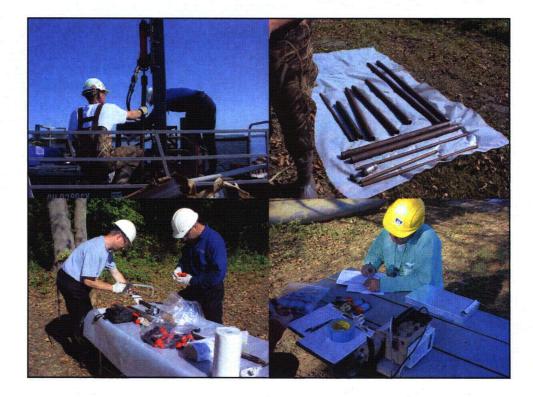


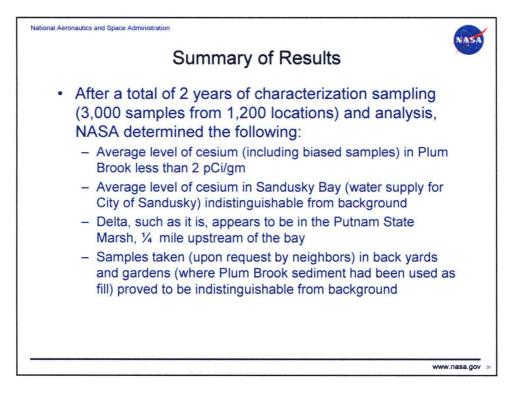


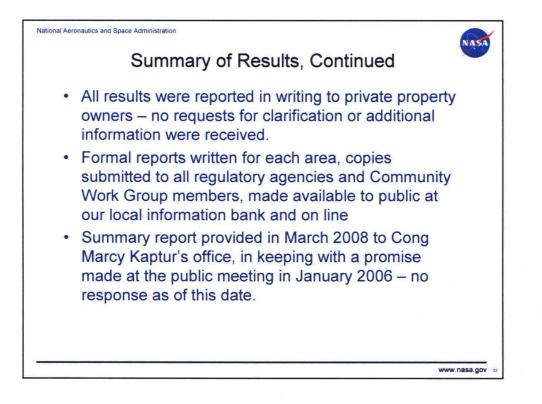








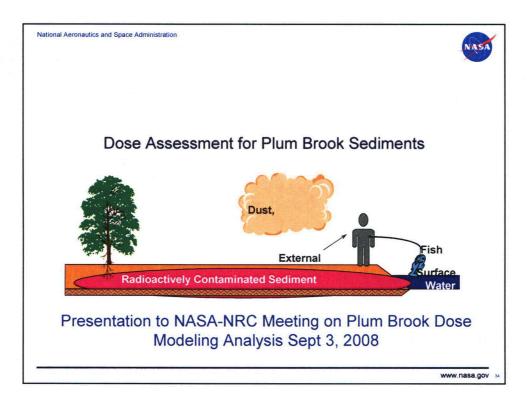


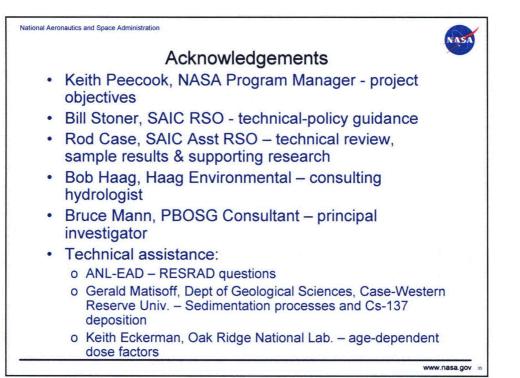


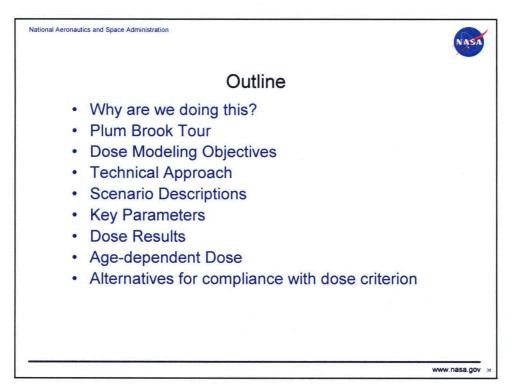
Where are we now?

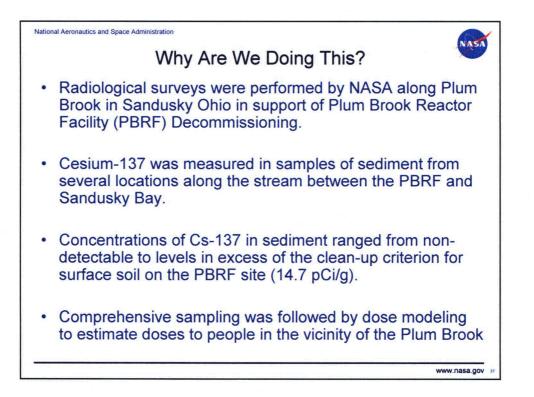
- We now have a very good understanding of where the contamination is, what the levels are, the hydrology, how it will likely move in the future, and current and projected land use for the various sections of Plum Brook
- The Resident Farmer scenario is not representative of the conditions along Plum Brook.
- NASA performed dose analysis to estimate doses to members of the public that could be exposed to cesium in Plum Brook sediments.
- In keeping with the concept of ALARA, NASA plans to perform spot cleanup along Plum Brook.

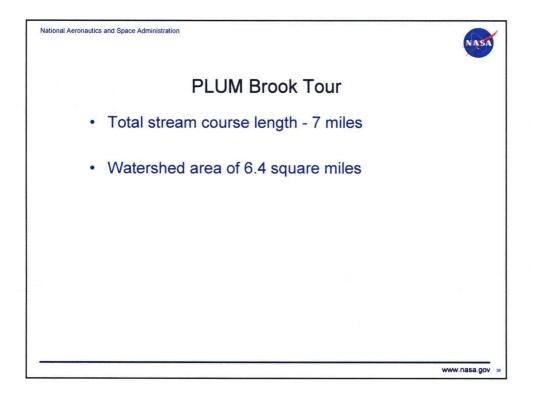
www.nasa.gov

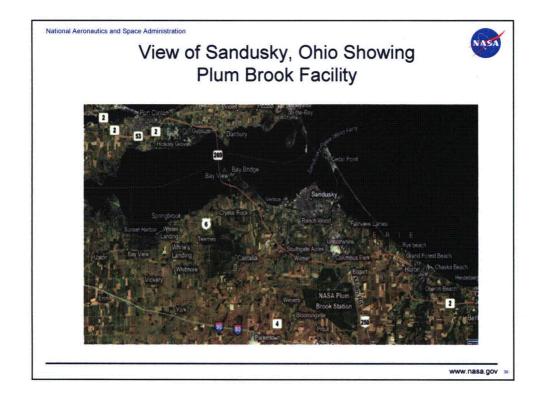


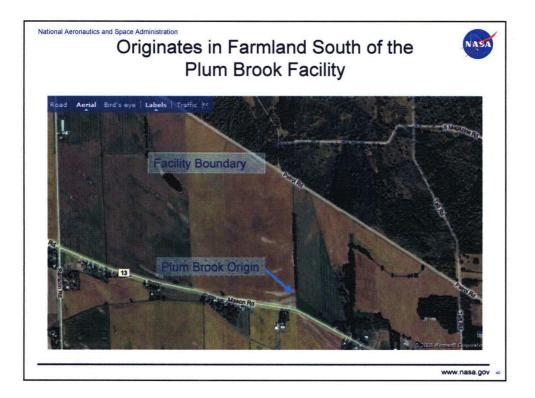




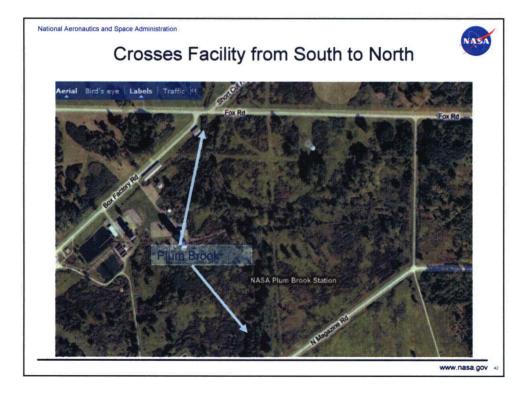


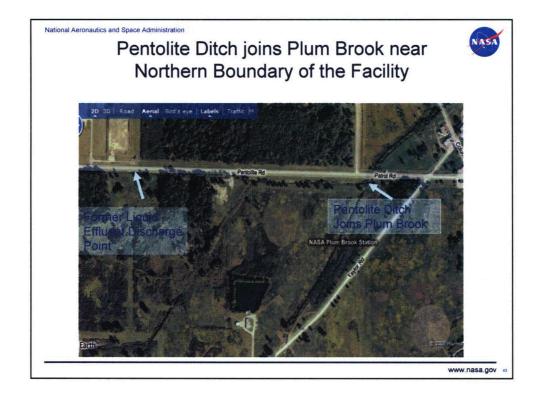


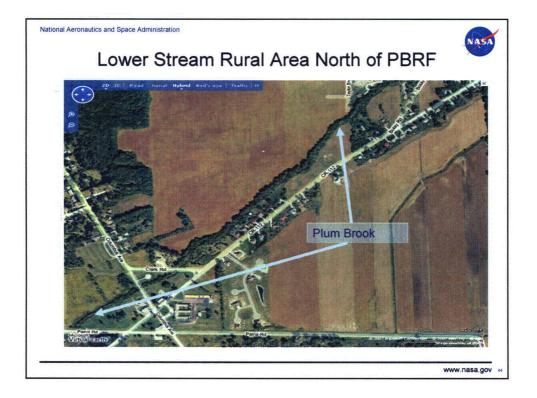






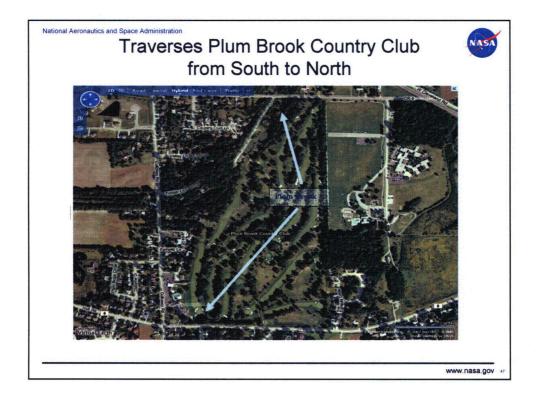


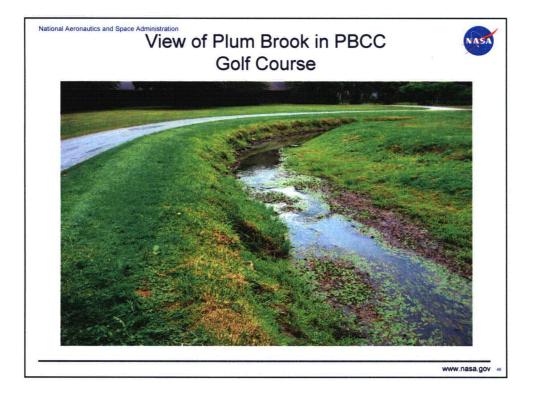


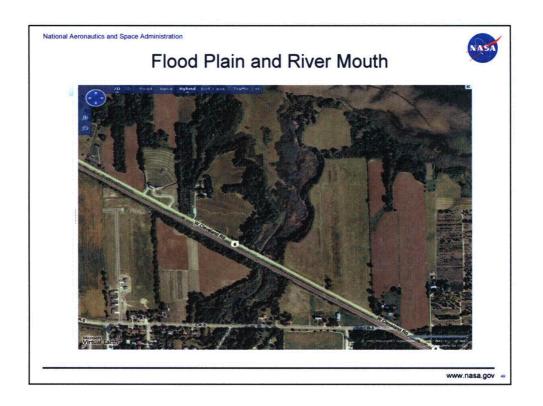




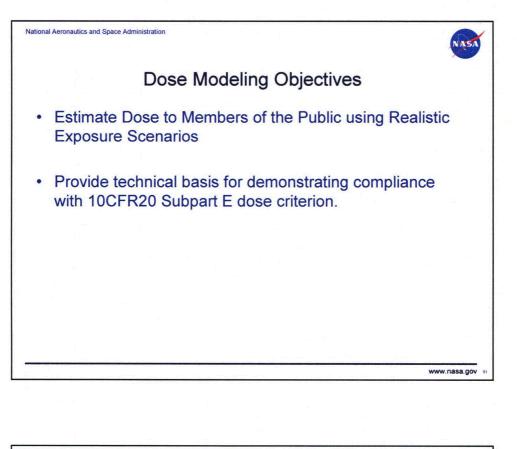


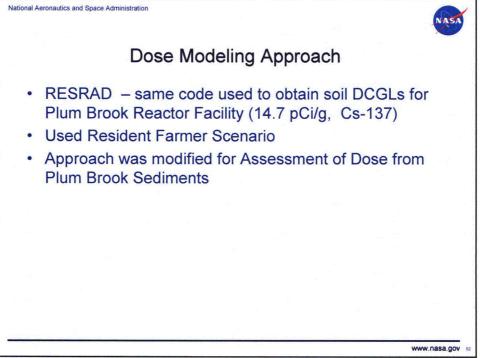


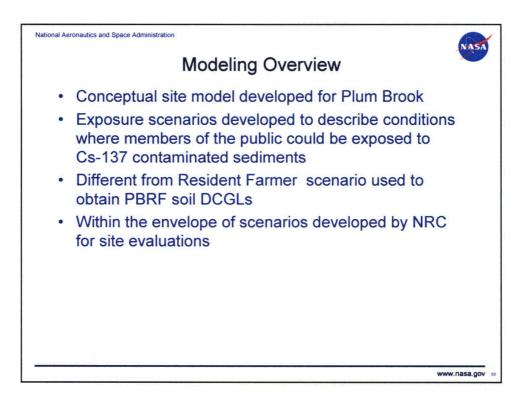


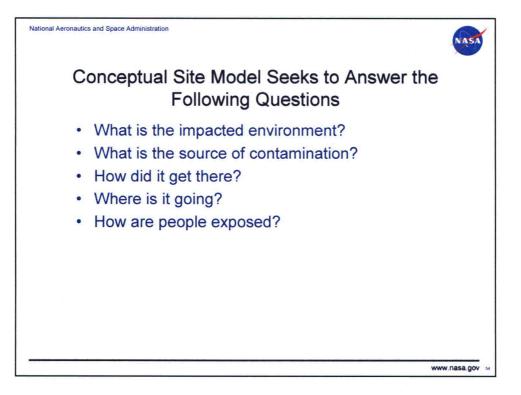


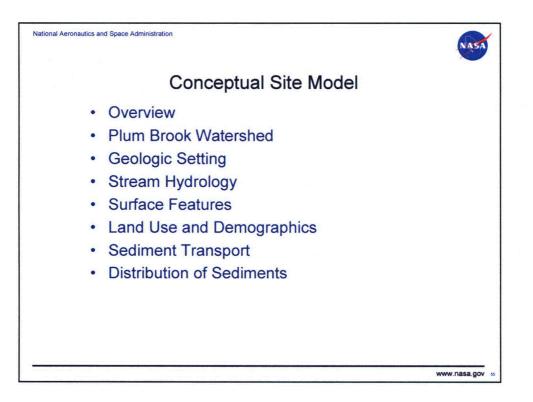


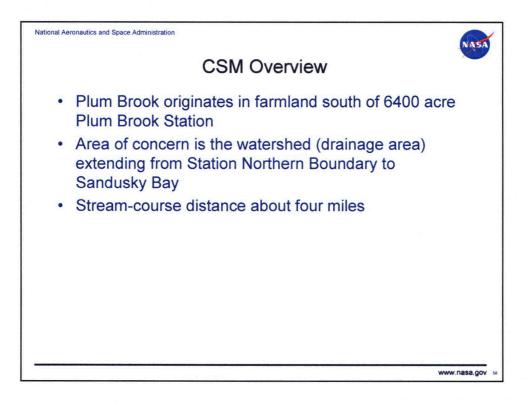


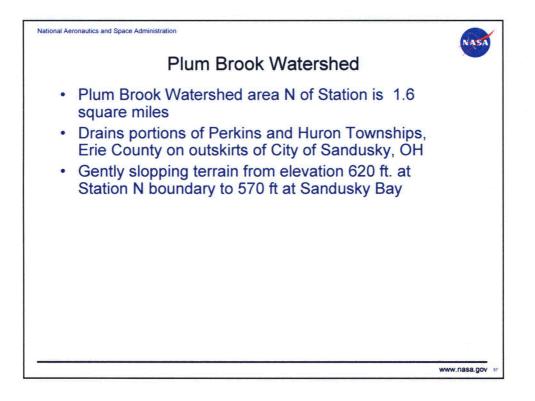


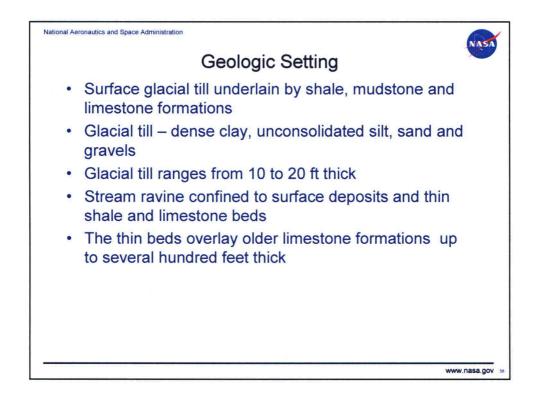


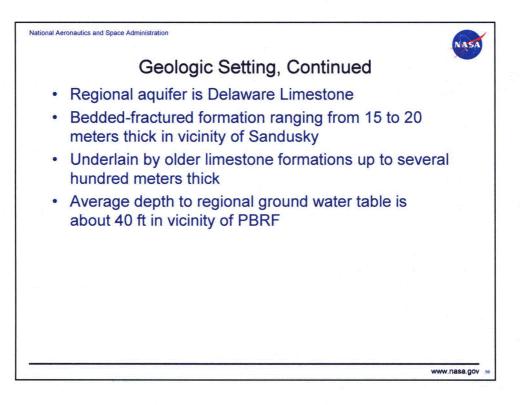


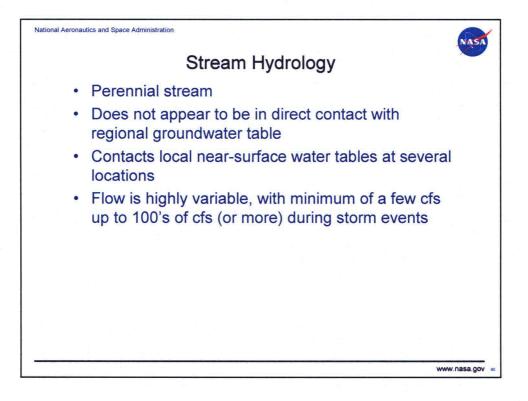


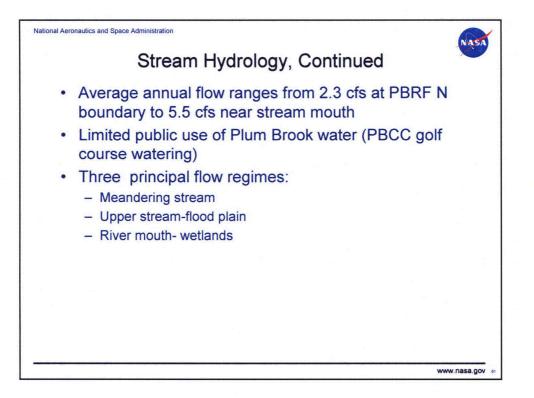


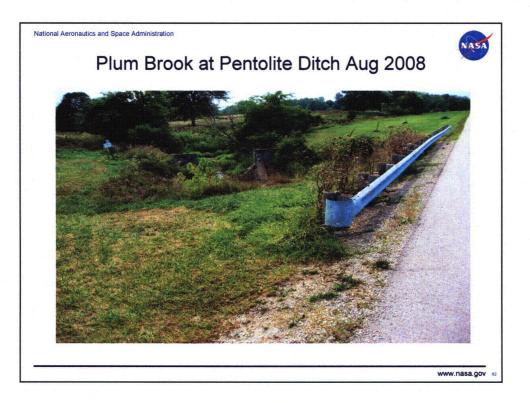


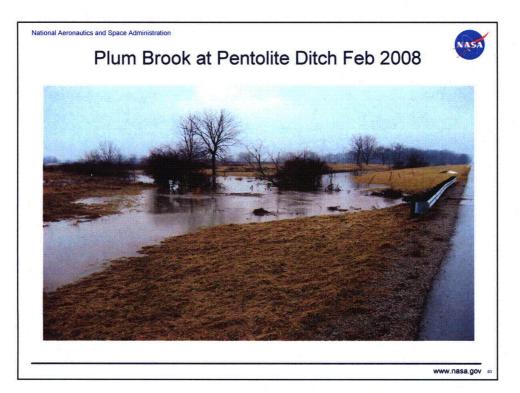


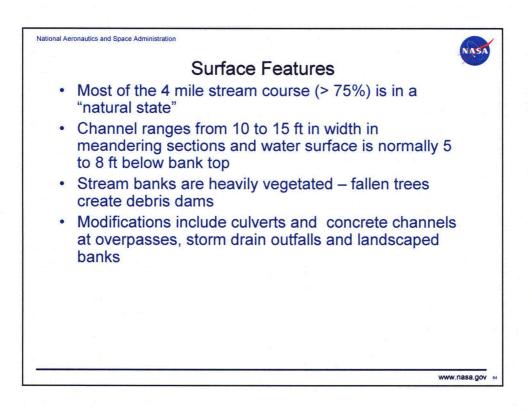


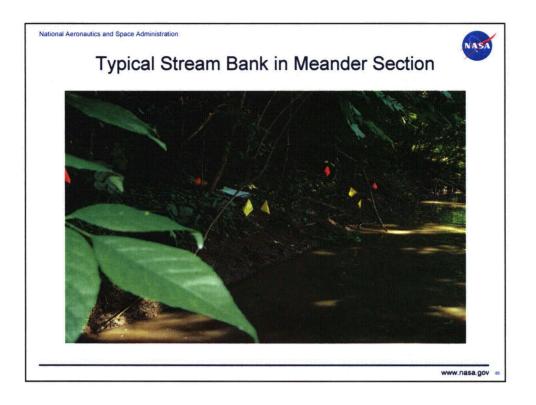


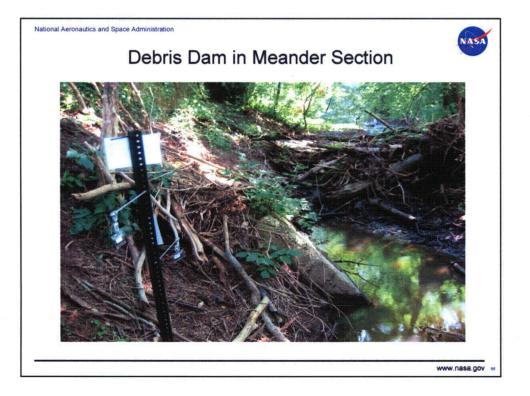


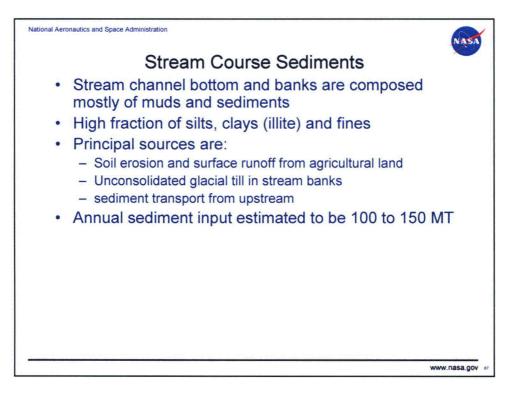


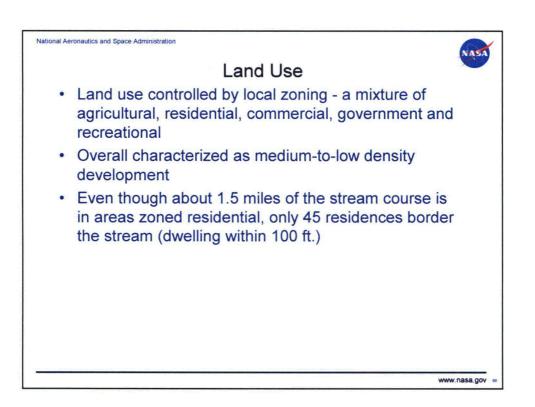


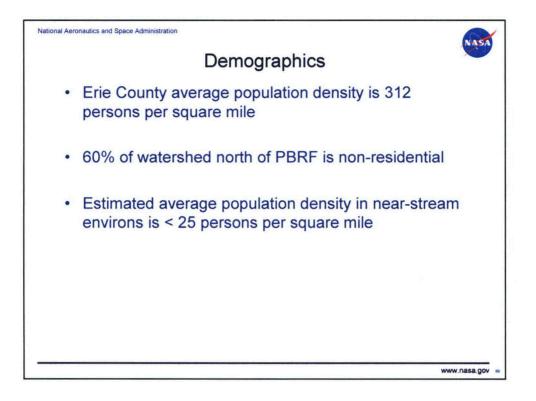


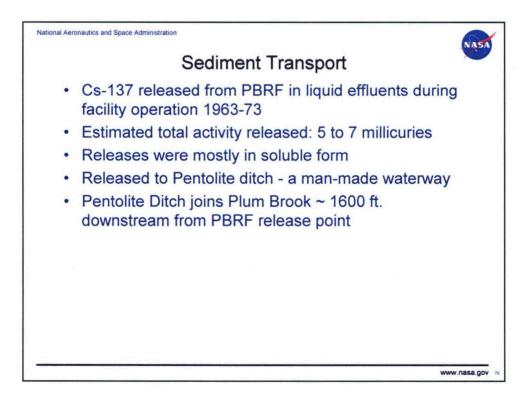


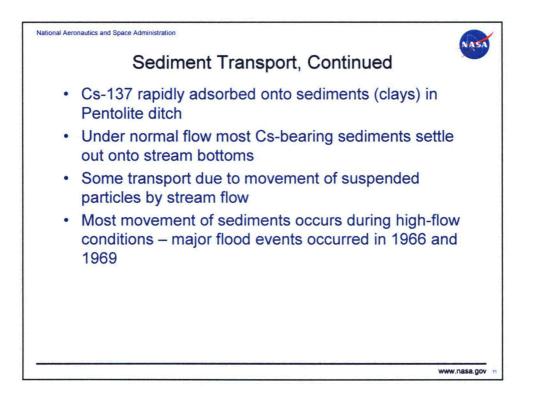


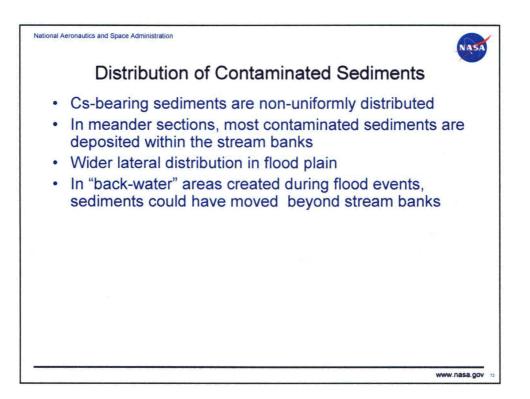


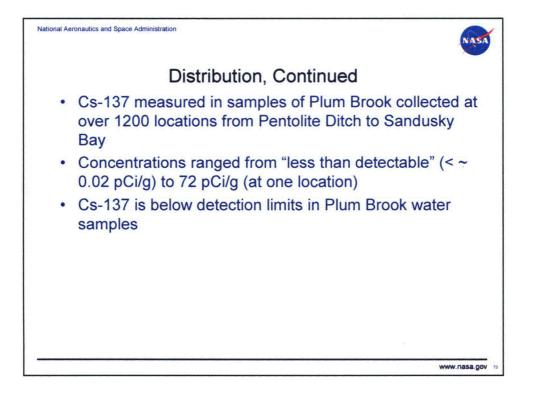




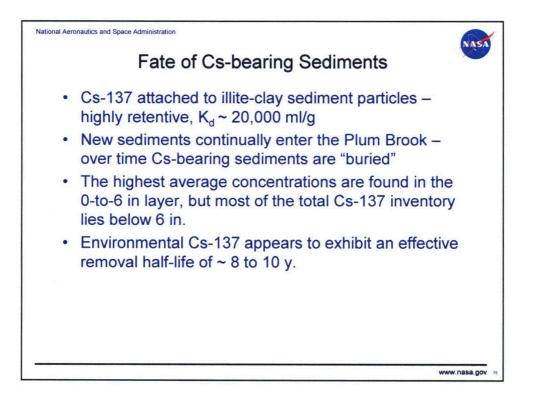


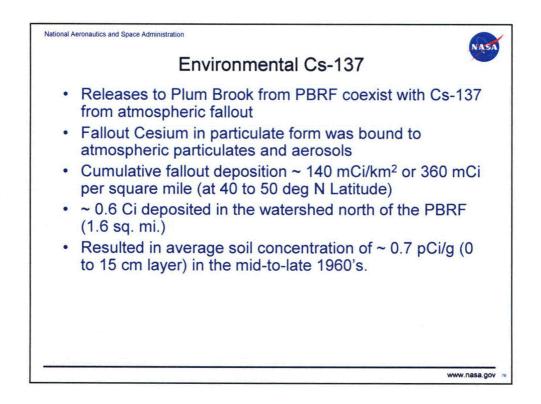


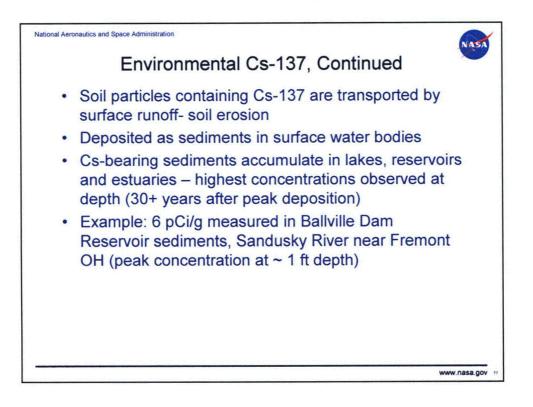


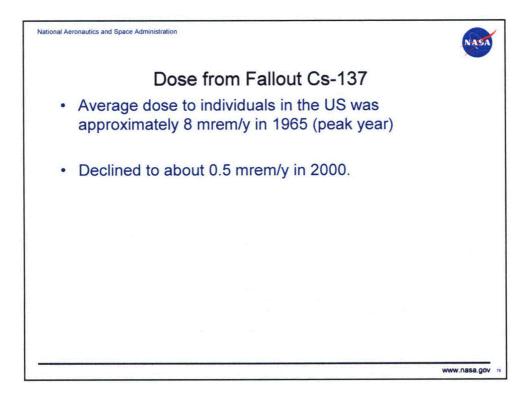


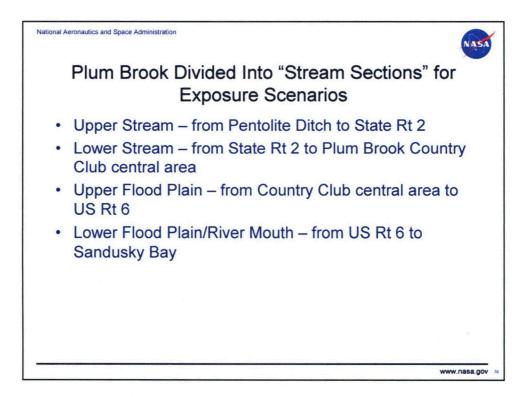
Section	No. of Locations Sampled	Cs-137 Concentration (pCi/g)		
Section		Range	Average	
& 2 -Upper and ower Stream Meander Sections	621	2.4E-02 to 72.4	1.16	
3 - Upper Flood Plain	238	5.8E-02 to 14.2	0.69	
4 - Lower Flood Plain and Mouth	44	3.6E-02 to 20.6	0.73	



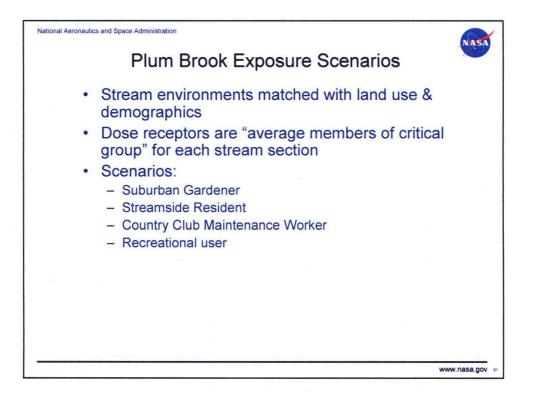


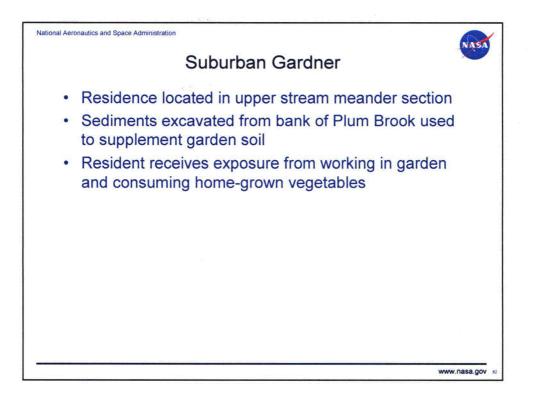


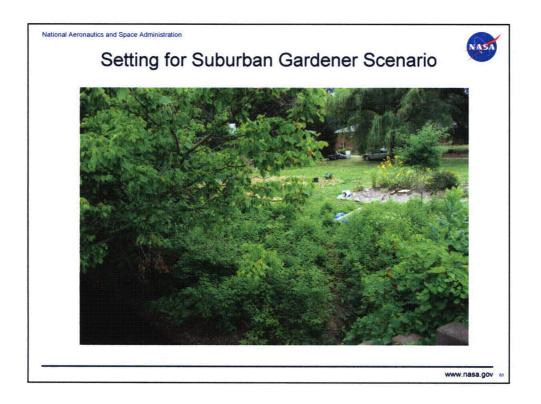


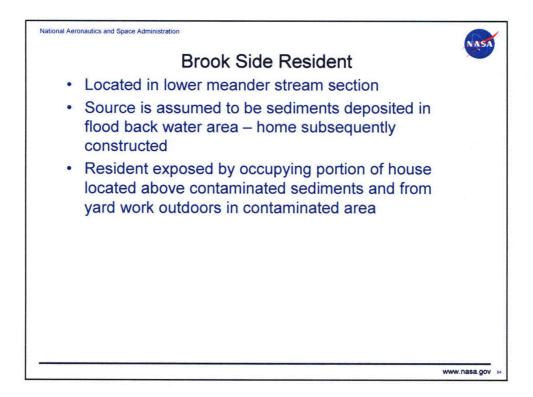


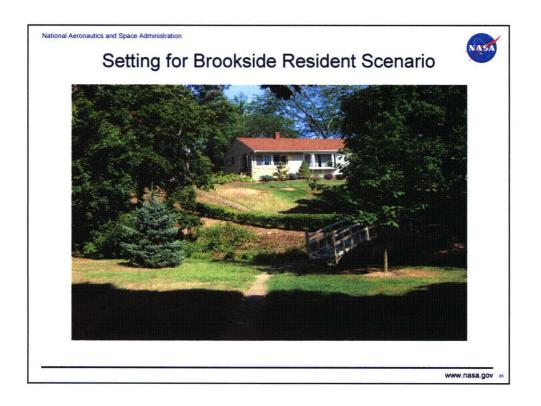
Ş	Stream	Section Summary	1	
Section	Stream Course (mi)	Land Use (zoning)	Public Access	
1 -Upper Stream (meander)	1.6	30% Residential 30% Agricultural 30% Commercial 10% Government/Muni.	Private property, or access by permission only	
2 - Lower Stream (meander)	· · · · · · · · · · · · · · · · · · ·	60% Residential 20% Government/Muni. 20% Commercial – recreational (Golf Club)	Private property, or access by permission only	
3 - Upper Flood Plain	0.85	60% Commercial - recreational (Golf Club) 40% Agricultural	Private property, or access by permission only	
4 - Lower Flood Plain and Mouth	0.55	100% Erie Metro Park	Controlled. public access	

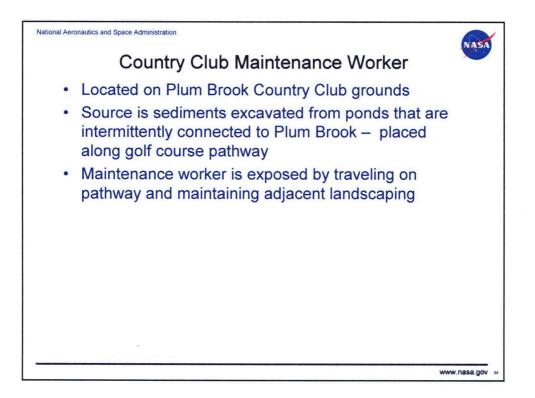


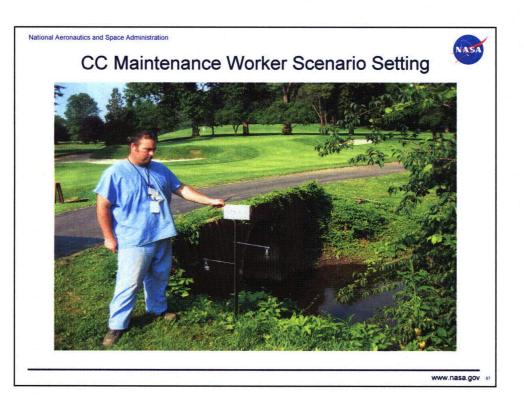


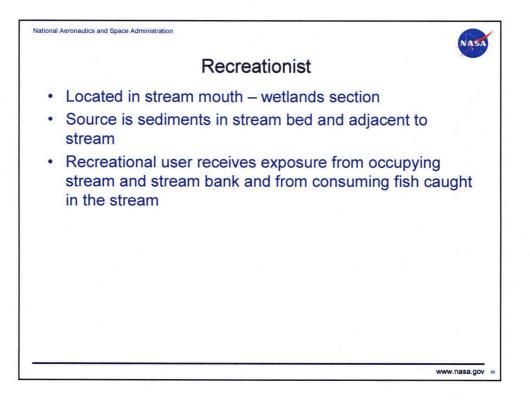


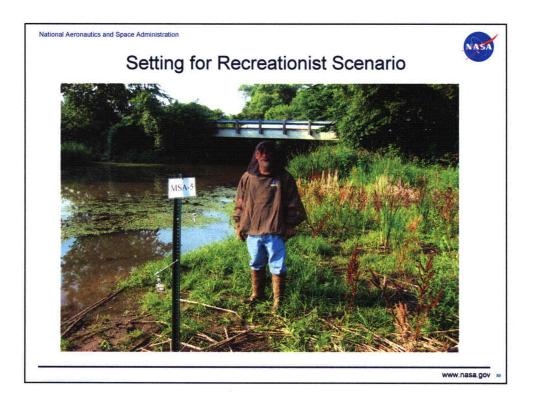


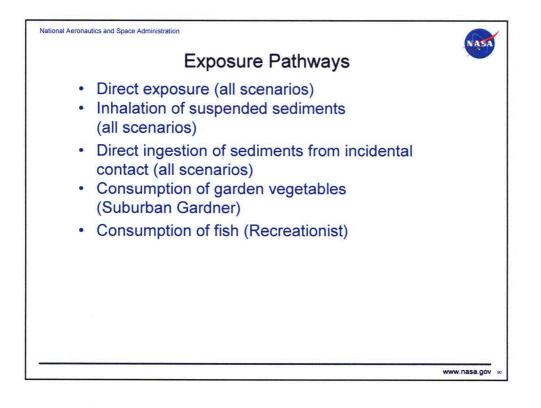








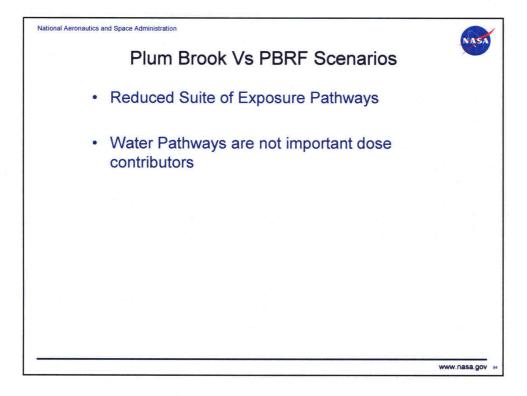


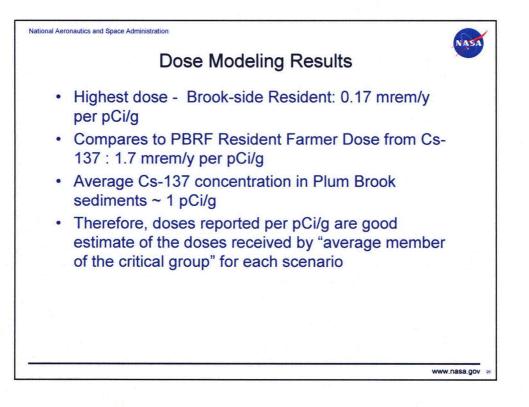


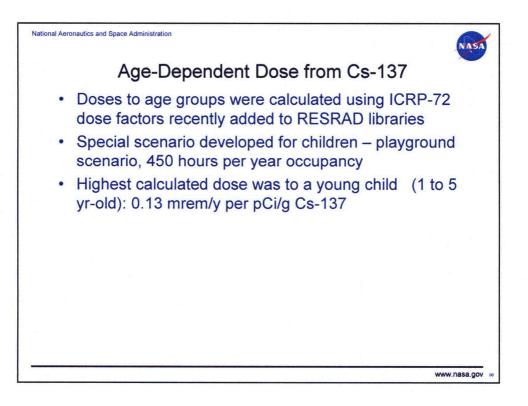
Dos	e Mode	Key Pa	rameters	
Scenario	Outdoor Occupancy (h/y)	Indoor Occupancy (h/y)	Area of Contaminated Zone (m ²)	Thickness of Contaminated Zone (m)
Suburban Gardner	123	NA	186	0.076 (3 in.)
Brook side Resident	80	1096	186	0.076 (3 in.)
Country Club Maintenance Worker	450	NA	600	0.076 (3 in.)
Natural Area Recreationist	105	NA	270,000	0.152 (6 in.)
PBRF Resident Farmer	964	5786	109,100	1

	Dose Modeling	g Result	S	
	Dose	Dose Fraction by Pathway (%)		
Scenario	(mrem/y per pCi/g)	Direct	Food Consumption	
Suburban Gardner	0.04	64	36 (vegetables)	
Brook Side Resident	0.17	99.9	NA	
Country Club Worker	0.10	99.9	NA	
Recreationist	0.11	33	67 (fish)	
PBRF Resident Farmer	1.7	82	18 (Plants, meat, milk)	

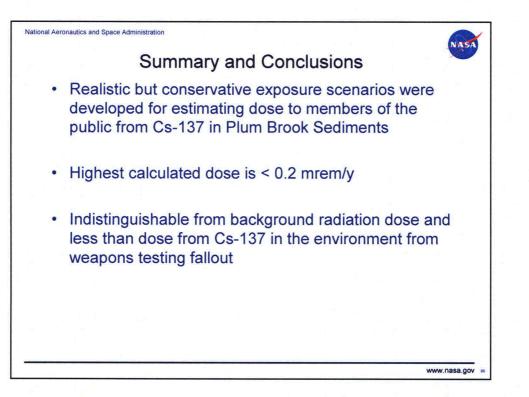
	Rank						
Scenario	Occupancy Fraction	Contaminated Zone Thickness	Area of Contaminated Zone	Dietary	Distribution Coef., K _D		
Suburban Gardner	1	2	7	7	3		
Brook side Resident	1	2	NA	NA	NA		
Country Club Maintenance Worker	1	2	NA	NA	NA		
Natural Area Recreationist	1	2	3	3	7		

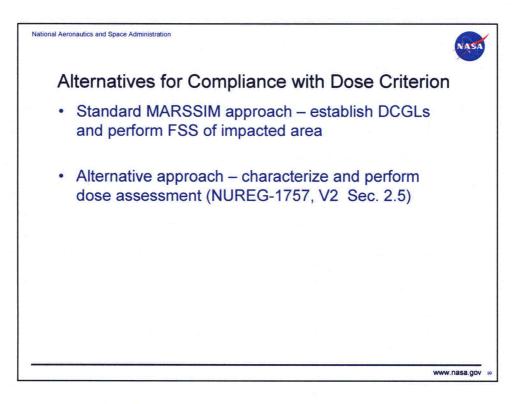




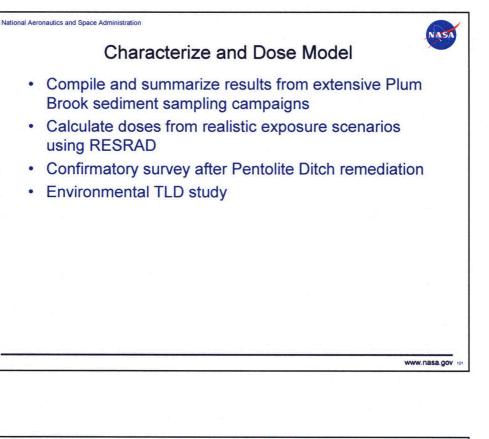


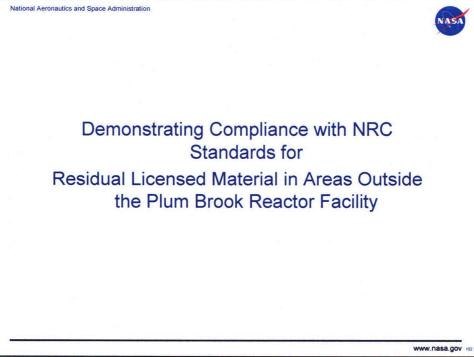
Radionuclide	Scenario -	Dose (mrem/y per pCi/g)		
		Deterministic	Probabilistic mean and standard deviation	
Co-60	Brook-side Resident	6.96E-01	6.79 ± 7.08 E-01	
Sr-90	Suburban Gardener	3.10E-01	3.13 ± 2.81 E-01	

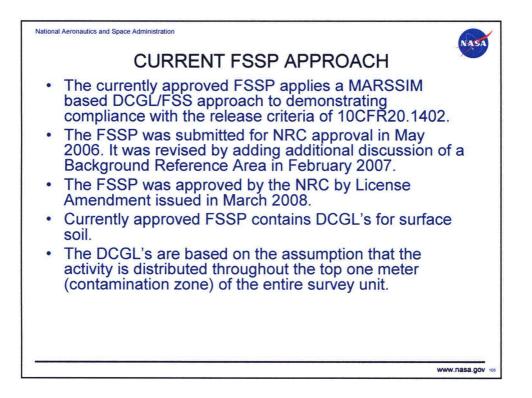


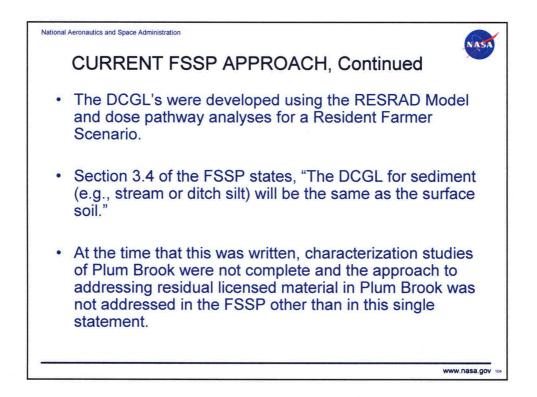


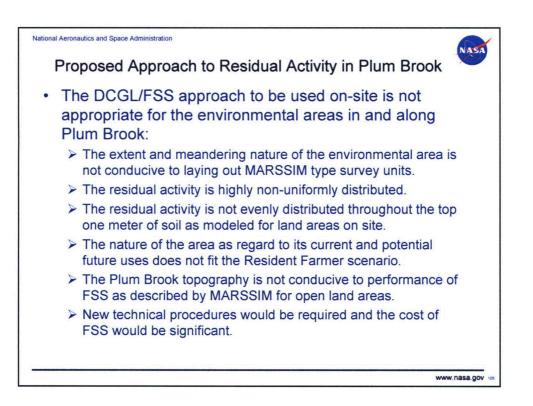
DCGL	DCGL for Dose Criteria Values (pCi/g)				
	1 mrem/y	3 mrem/y	10 mrem/y	15 mrem/y	25 mrem/y
average concentration DCGL _W)	5.8	17.3	67.6	86.4	143.9
elevated area concentration (DCGL _{EMC} example – one m²)	68.2	204.5	681.7	1022	1704

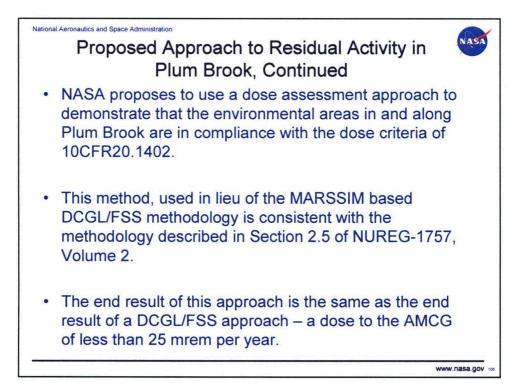


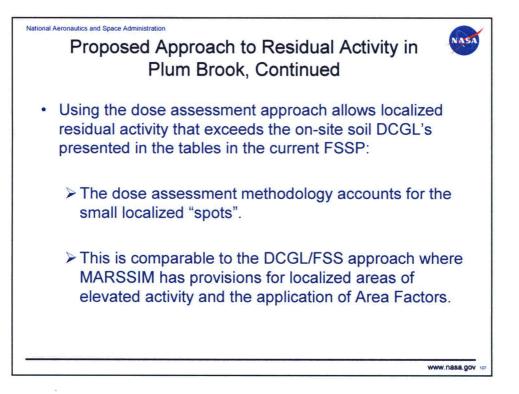


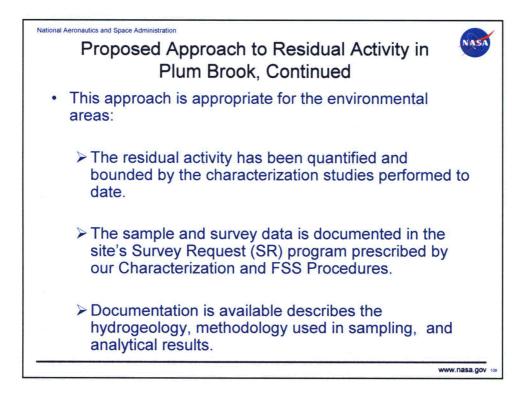


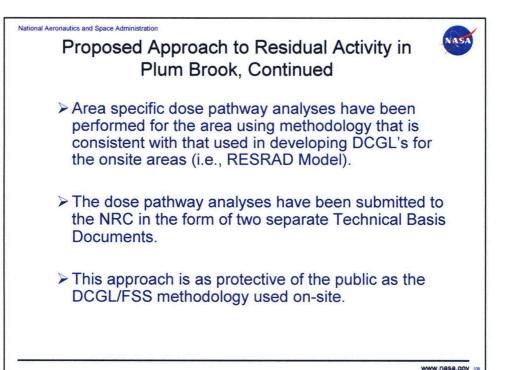


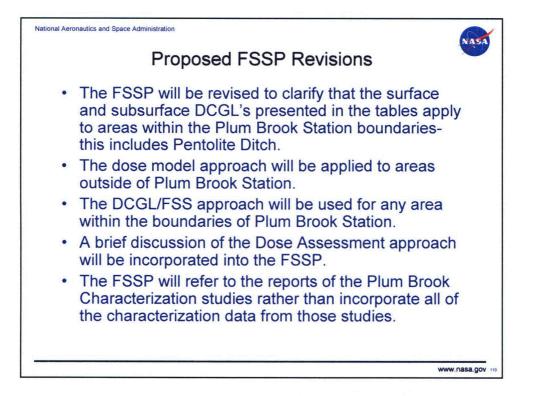


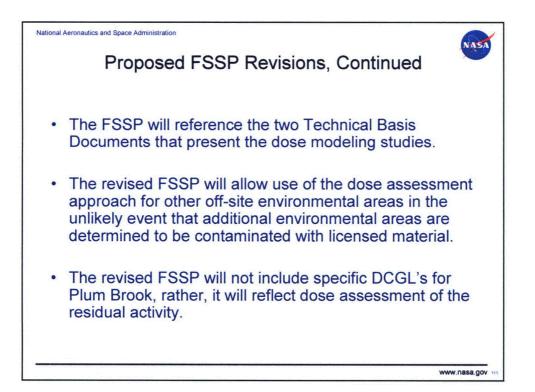


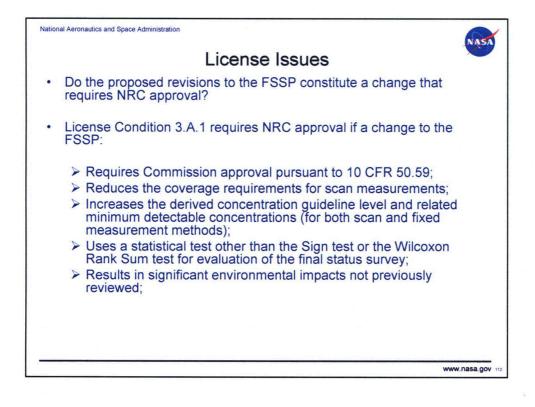


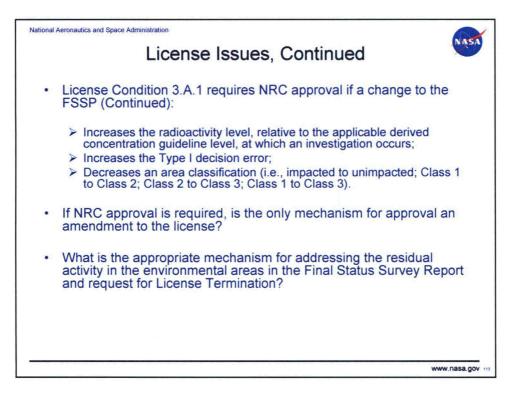












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