

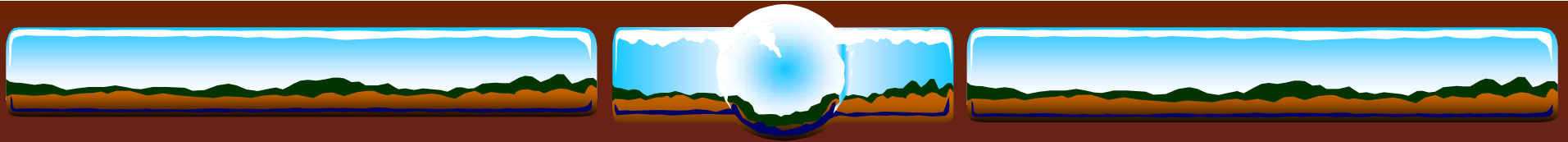
Pinal County

Speciation and Source Apportionment
Project

Preliminary Report

Kale Walch

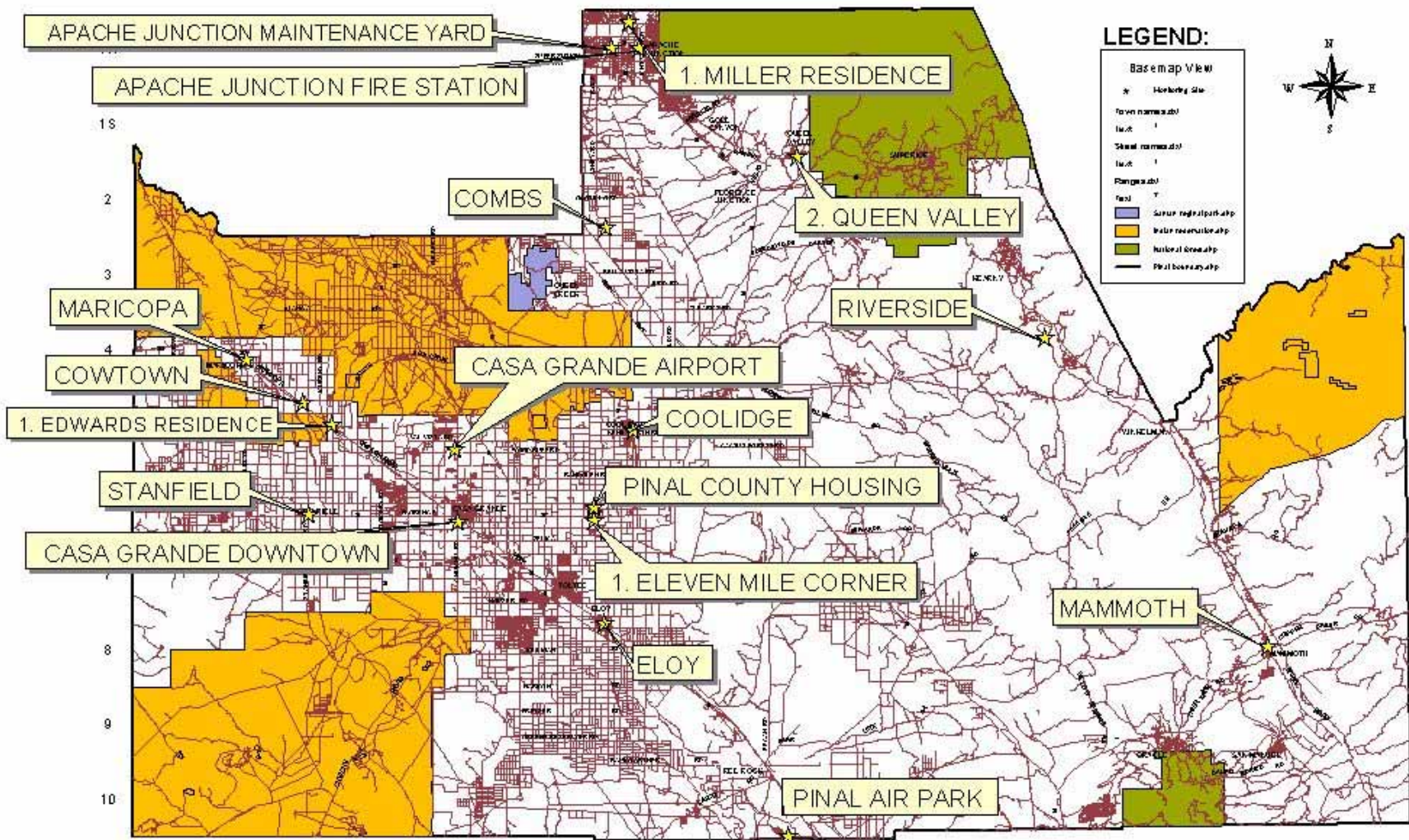
December 7, 2004



Project Description

- ❖ The project was designed to identify sources of particulate matter in Pinal County.
- ❖ PM10 and PM2.5 Mini-Vol samplers utilizing Pallflex quartz filters and Teflon filters were operated at five sites
 - ❖ Coolidge, Pinal County Housing, Casa Grande, Cowtown, and Stanfield
- ❖ At least one FRM sampler was also located at each site.
- ❖ Road counts and soil sampling were conducted at the Cowtown site.
 - ❖ Soil samples were collected from feedlots, dirt roads, and agricultural fields.

2E 3 4 5 6 7 8 9 10 11 12 13 14 15 16 17 18

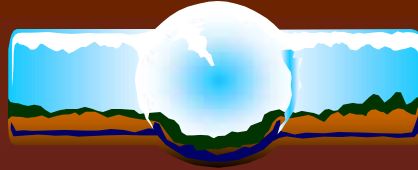









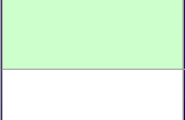
MONITORING STATIONS Air Quality Control



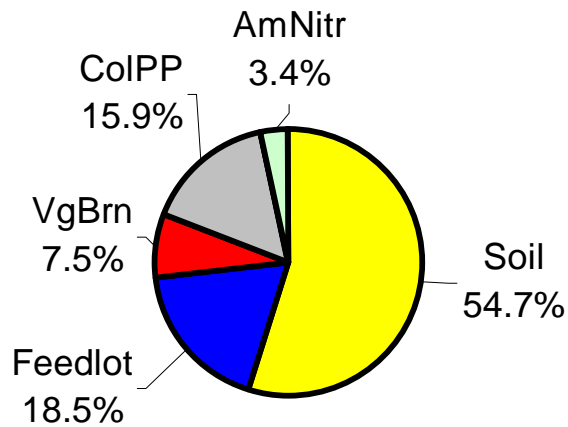
Project Description

- ❖ Sampling took place from October 1, 2003 to November 10, 2003.
- ❖ Mini-Vols were operated on a 1 in 3 schedule.
- ❖ FRM Hi-Vols were operated at Coolidge, Pinal County Housing, Casa Grande and Stanfield on a 1 in 6 schedule.
- ❖ FRM TEOMs were operated continuously at Pinal County Housing and Cowtown.
- ❖ A FRM PM_{2.5} sampler was operated at Casa Grande on a 1 in 6 schedule
- ❖ DRI performed speciation and source apportionment analysis on the Mini-Vol filters.



	Source ID	Generic source description
	Soil	Geological soil
	Feedlot	Feedlot soil
	MvEmi	Motor vehicle emission
	VgBrn	Vegetative burning
	ColPP	Coal fired power plant
	AmSulf	Ammonium sulfate
	AmNitr	Ammonium nitrate
	Other	Unclassified sources

Casa Grande, Pinal County, Arizona PM₁₀, 10/03/2003



PM₁₀
($\mu\text{g}/\text{m}^3$)

10/3/03


13.3

10/18/03

39.2

11/5/03

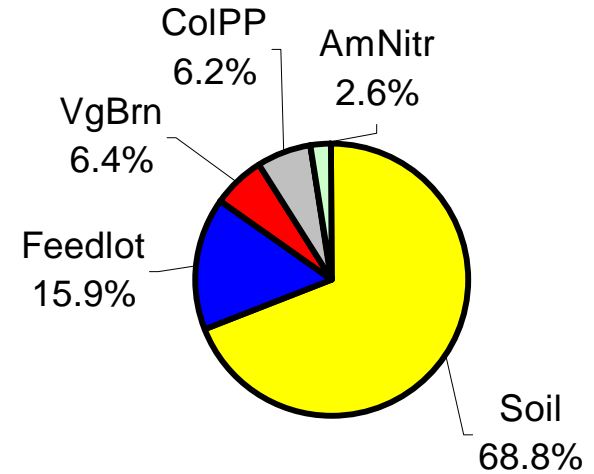
57.3

PM_{2.5} 
($\mu\text{g}/\text{m}^3$)

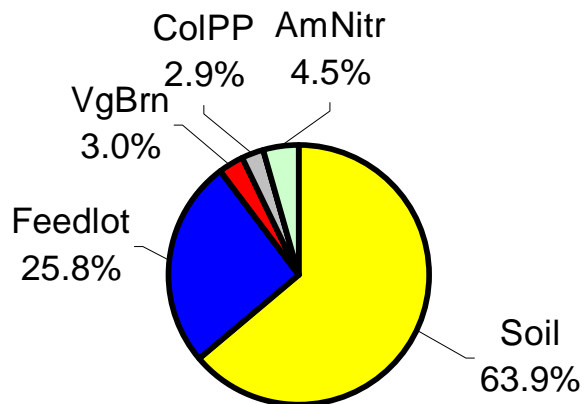
11/5/03

20.2

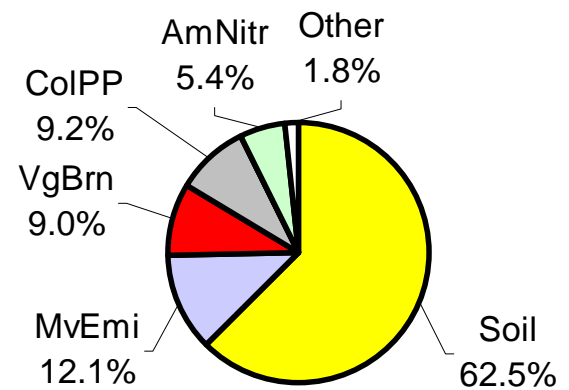
Casa Grande, Pinal County, Arizona PM₁₀, 10/18/2003



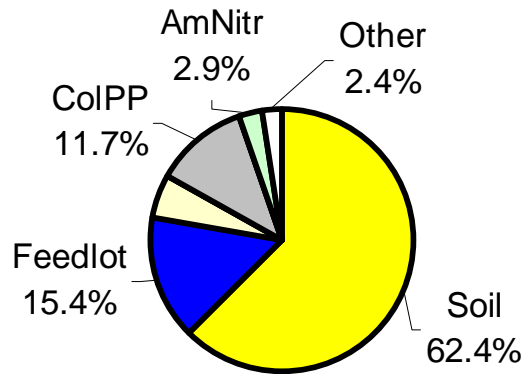
Casa Grande, Pinal County, Arizona PM₁₀, 11/05/2003



Casa Grande, Pinal County, Arizona PM_{2.5}, 11/05/2003



Coolidge Maintenance Yard,
Pinal County, Arizona PM₁₀,
10/03/2003



PM₁₀
($\mu\text{g}/\text{m}^3$)

10/3/03

25.3

10/18/03

45.4

11/5/03

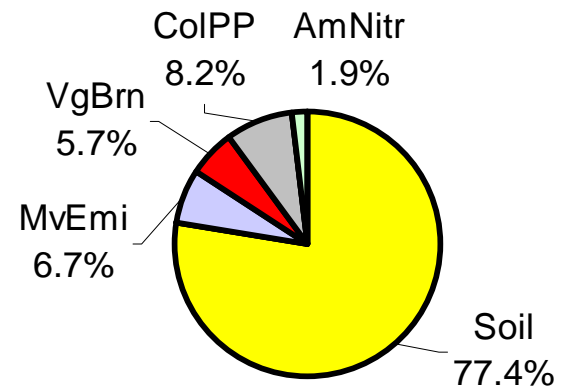
60.8

PM_{2.5}
($\mu\text{g}/\text{m}^3$)

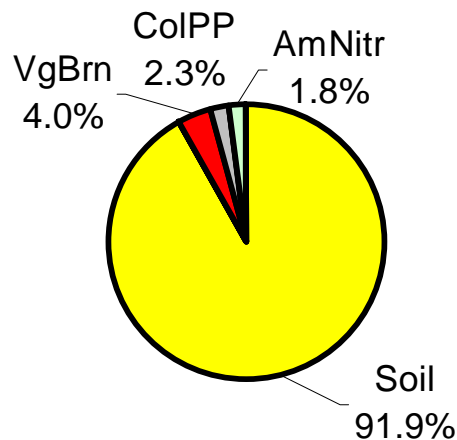
11/5/03

23.2

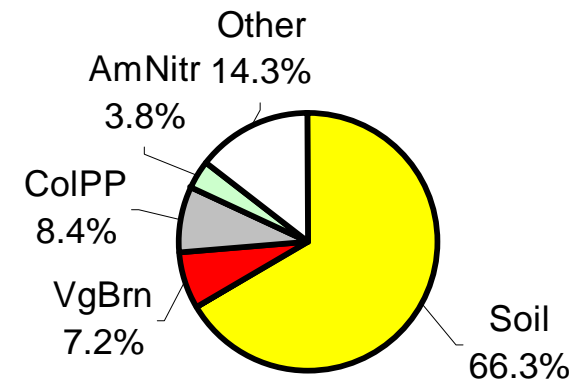
Coolidge Maintenance Yard,
Pinal County, Arizona PM₁₀,
10/18/2003



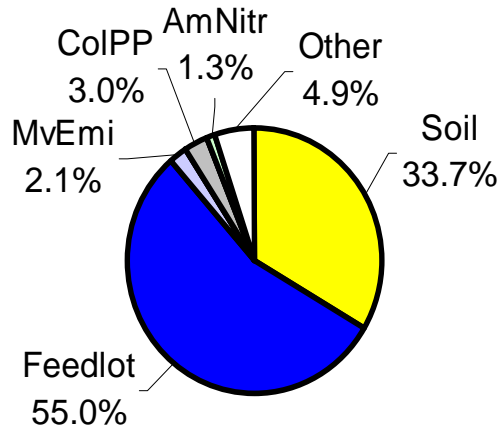
Coolidge Maintenance Yard,
Pinal County, Arizona PM₁₀,
11/05/2003



Coolidge Maintenance Yard,
Pinal County, Arizona PM_{2.5},
11/05/2003



Cowtown, Pinal County, Arizona
PM₁₀, 10/03/2003



PM₁₀
($\mu\text{g}/\text{m}^3$)

10/3/03

74.5

10/18/03

264.4

11/5/03

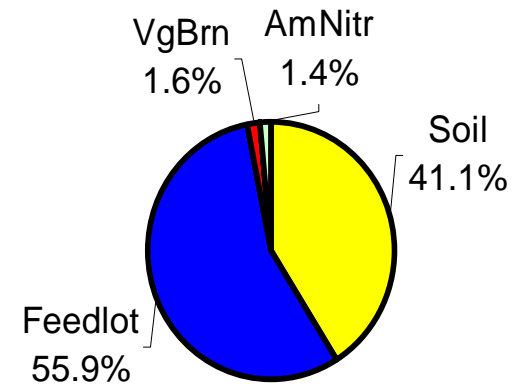
221.7

PM_{2.5}
($\mu\text{g}/\text{m}^3$)

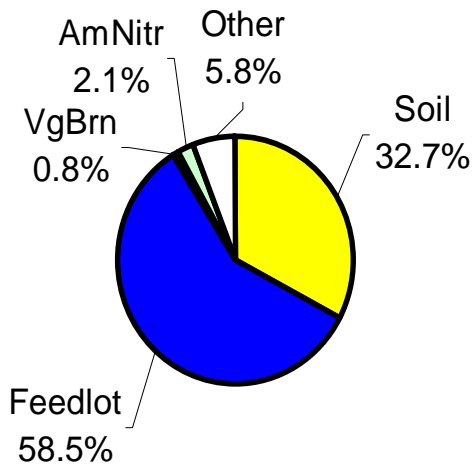
11/5/03

57.0

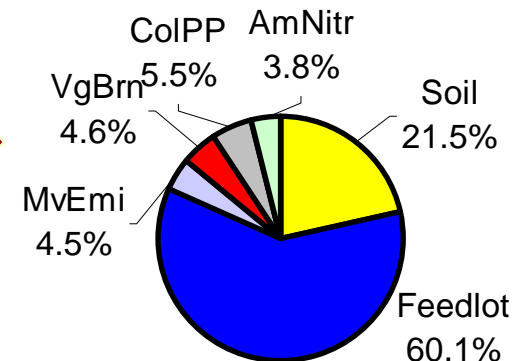
Cowtown, Pinal County, Arizona
PM₁₀, 10/18/2003



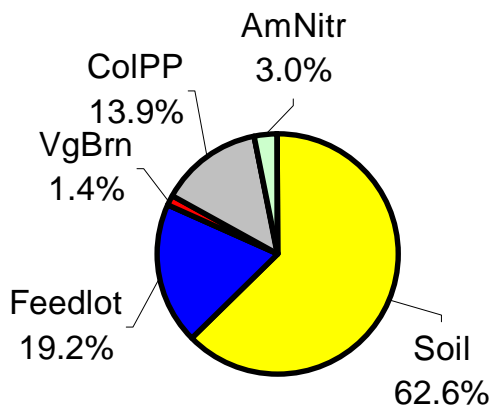
Cowtown, Pinal County, Arizona
PM₁₀, 11/05/2003



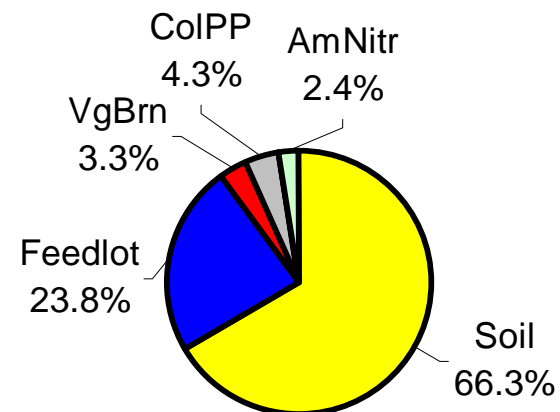
Cowtown, Pinal County, Arizona
PM_{2.5}, 11/05/2003



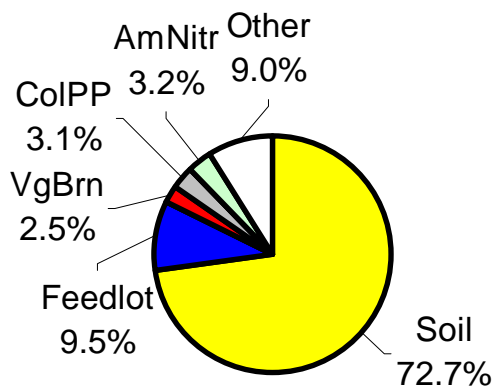
Pinal County Housing, Arizona
PM₁₀, 10/03/2003



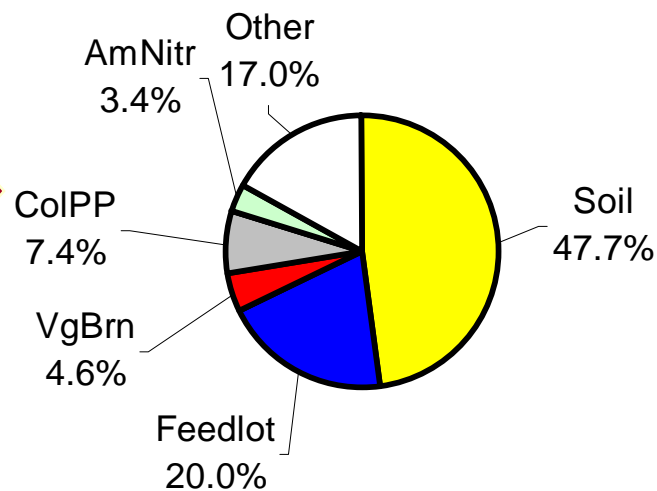
Pinal County Housing, Arizona
PM₁₀, 10/18/2003



Pinal County Housing, Arizona
PM₁₀, 11/05/2003



Pinal County Housing, Arizona
PM_{2.5}, 11/05/2003



PM₁₀
($\mu\text{g}/\text{m}^3$)

10/3/03

14.8

10/18/03

61.9

11/5/03

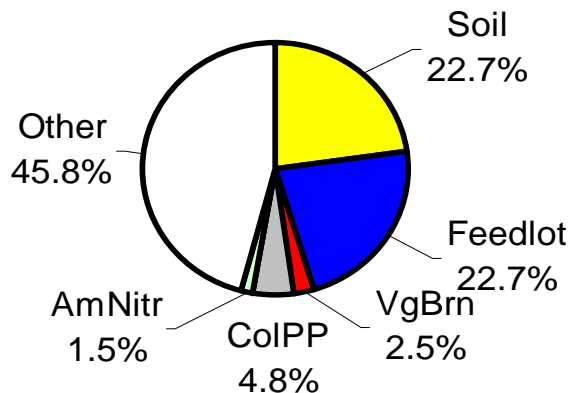
81.6

PM_{2.5}
($\mu\text{g}/\text{m}^3$)

11/5/03

32.2

Stanfield County Complex, Pinal County, Arizona PM₁₀, 10/03/2003



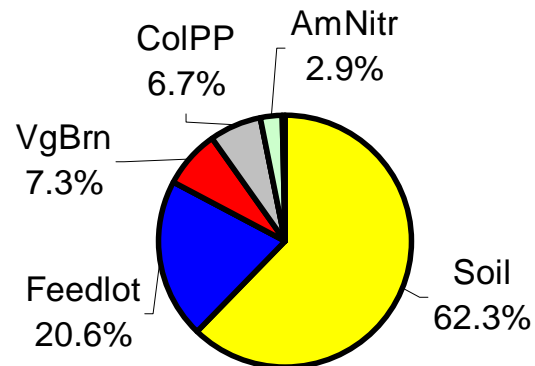
PM₁₀
($\mu\text{g}/\text{m}^3$)

10/3/03

43.1

10/18/03

Stanfield County Complex, Pinal County, Arizona PM₁₀, 10/18/2003



56.0

11/5/03

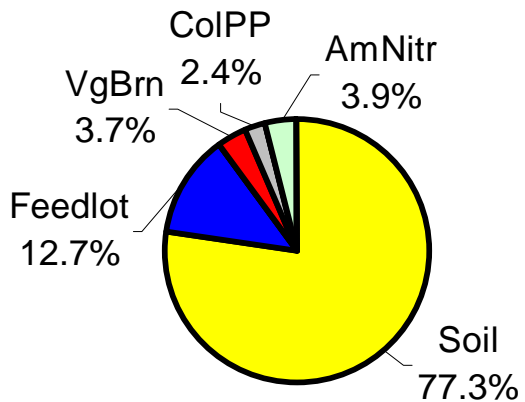
82.8

PM_{2.5}
($\mu\text{g}/\text{m}^3$)

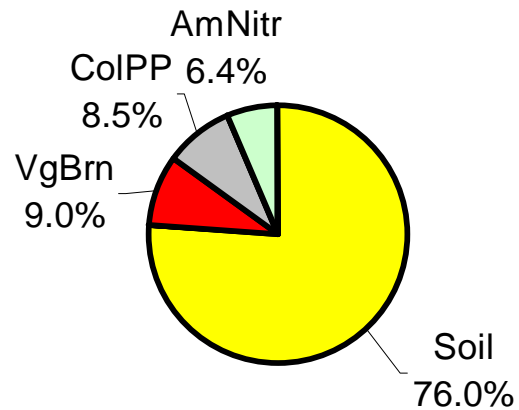
11/5/03

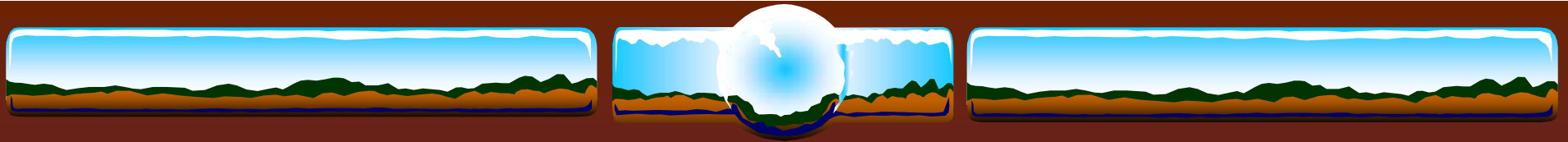
28.4

Stanfield County Complex, Pinal County, Arizona PM₁₀, 11/05/2003



Stanfield County Complex, Pinal County, Arizona PM_{2.5}, 11/05/2003





Conclusions

- ❖ The project shows soil and feedlot emissions are prominent sources.
- ❖ Soil emissions could be attributed to dirt roads, open field agricultural, and construction.
- ❖ Feedlot and Coal Power Plant emissions appeared in unexpected locations.
- ❖ Additional Analysis
 - ❖ HYSPLIT Modeling to be performed
 - ❖ Comparison with FRM data
 - ❖ Final Report