

Floodplain Amendment Pilot – Phase III Monitoring Update

Former DuPont Waynesboro Site, Virginia
Area of Concern (AOC) 4



July 24, 2018

AECOM

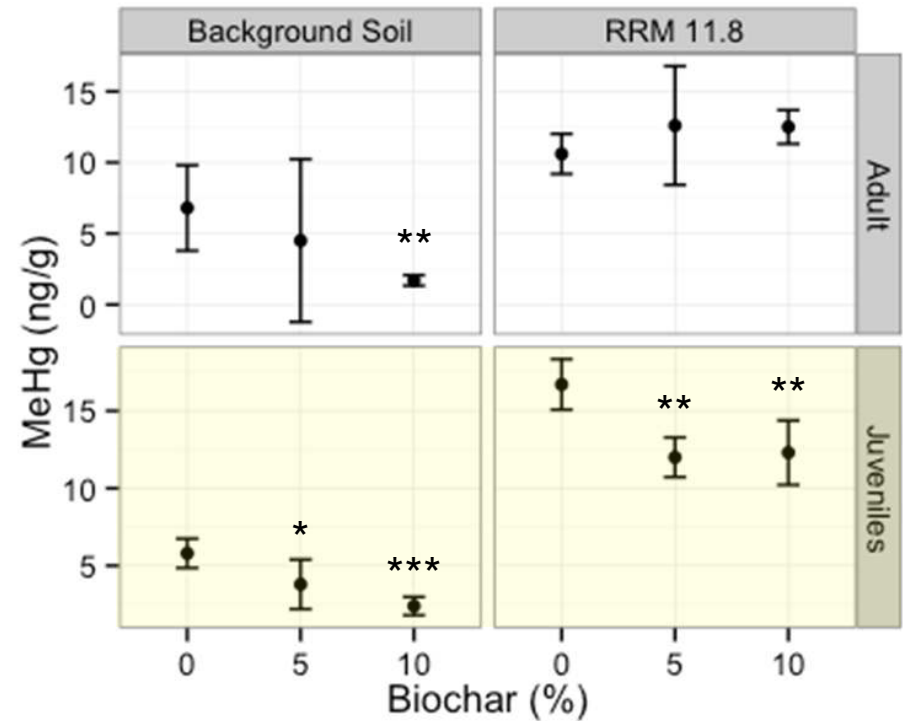
Agenda

- Background
- Objectives
- Scope
- Results
- Preliminary Findings
- Path Forward



Background

- Phase I- Bench-Scale Tests
- Phase II- Field Tests
- Phase III- Field Application



Objectives

- Assess efficacy of carbon amendments in reducing the bioavailability of MeHg in floodplain soils to terrestrial invertebrates in AOC 4.
- Identify and monitor potential unintended consequences to invertebrates and plants.



Scope



Results

–No apparent adverse effects of biochar to growth/abundance

Terrestrial Vegetation



Terrestrial Invertebrates



Analytical Data Summary- 6 Mo.

–Pairwise Comparisons; Bonferroni post hoc ($p < 0.05$)

Monitoring		Post Amendment Compared to Baseline				
Media	Parameter	Control	Amended (Biochar)			
			Chip		Medium	
			5%	10%	5%	10%
Adult Earthworm	THg	↑	-	-	-	-
	MeHg	-	-	-	-	-
Soil	THg	-	-	↓	-	-
	Seq. Extraction (THg)	↑	-	-	-	-

 No Sig. Diff.
  Increase
  Decrease

Analytical Data Summary- 12 Mo.

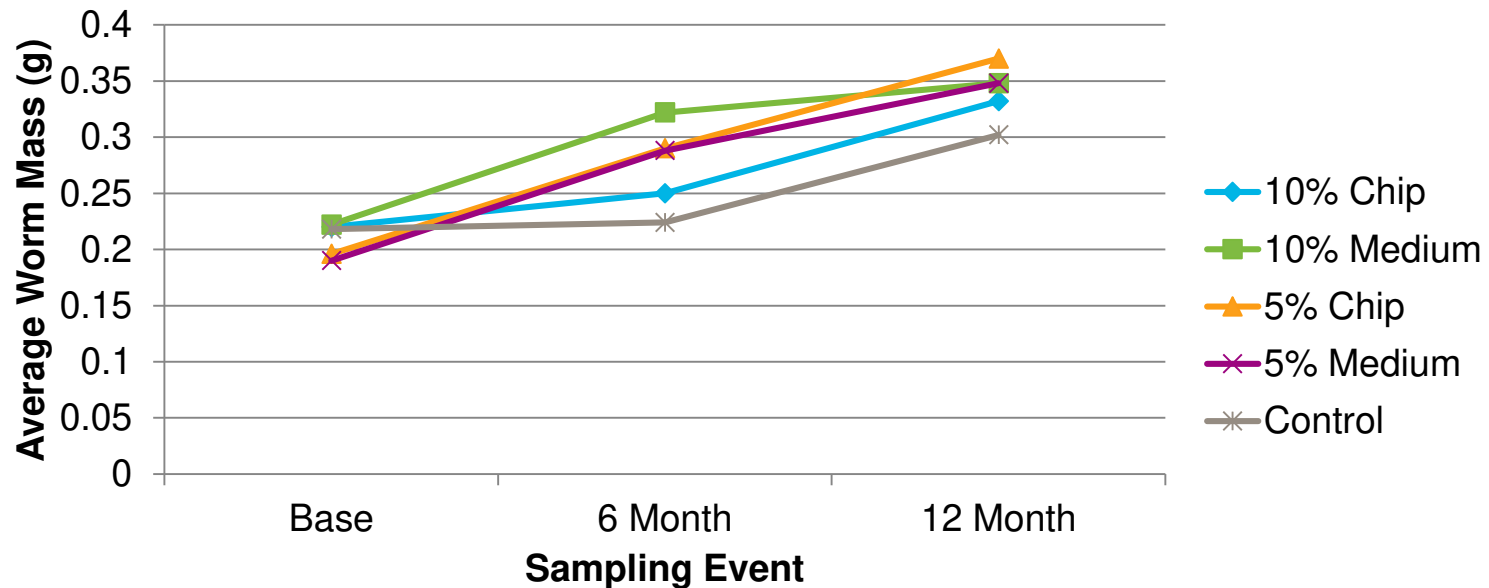
–Pairwise Comparisons; Bonferroni post hoc ($p<0.05$)

Monitoring		Post Amendment Compared to Baseline				
Media	Parameter	Control	Amended (Biochar)			
			Chip		Medium	
			5%	10%	5%	10%
Adult Earthworm	THg	-	-	-	-	-
	MeHg	-	-	-	-	-
Soil	THg	-	-	-	-	-
	Seq. Extraction (THg)	NA				

 No Sig. Diff.
  Increase
  Decrease

Results

- No evidence of significant effect of biochar on Hg in soil or adult earthworms
- Non-detectable MeHg in soil
- Pilot Study earthworm population



Preliminary Findings

- There are no readily detectable unintended consequences of using biochar as a floodplain amendment.
- Are there measurable differences in mercury concentrations in soils and terrestrial invertebrate tissues as a result of the biochar amendment?
 - To be determined; pending evaluation of 12-month data

Path Forward

- Evaluation of remaining 12-Month data
- Consider potential for biochar as a remedial option
- Final Report- 4Q2018

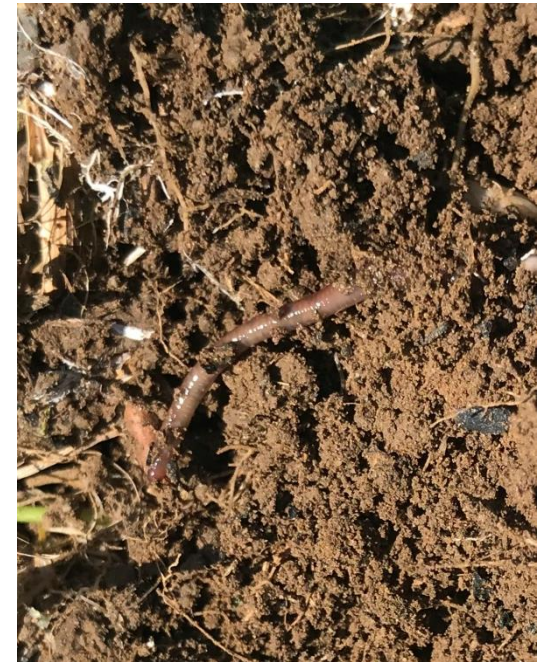
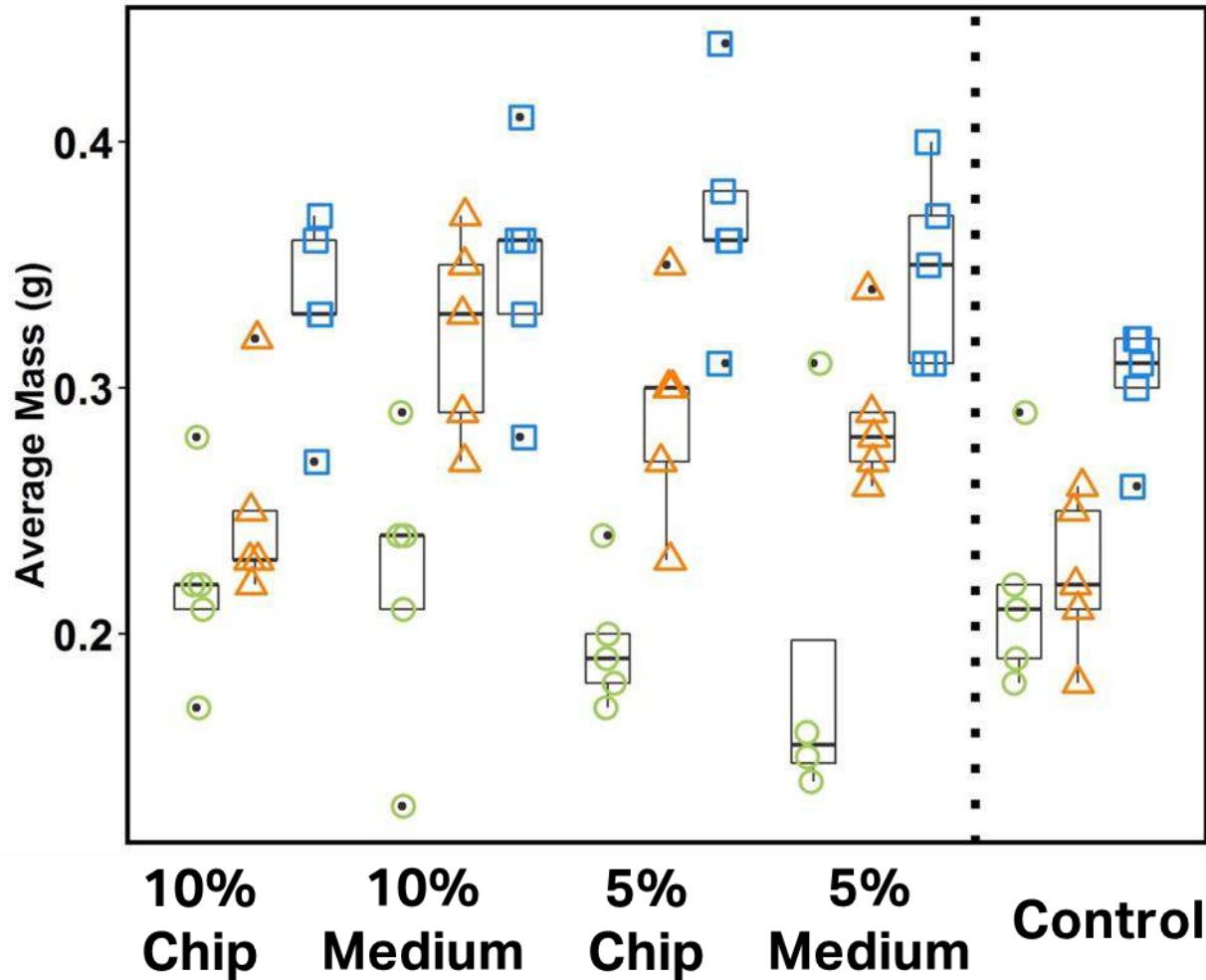


Thank You

Bill.Reese@aecom.com

DATA SLIDES

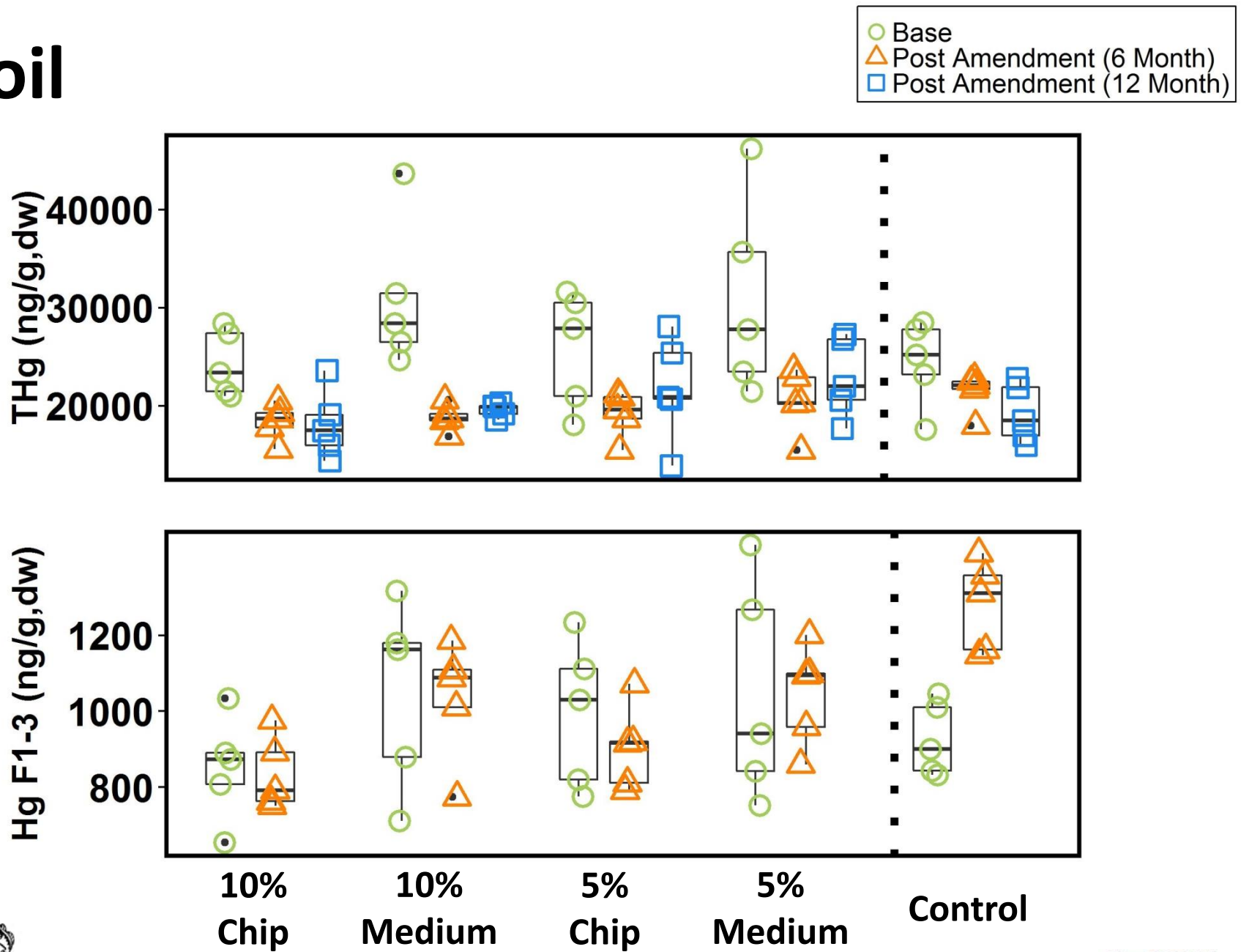
Earthworm Growth



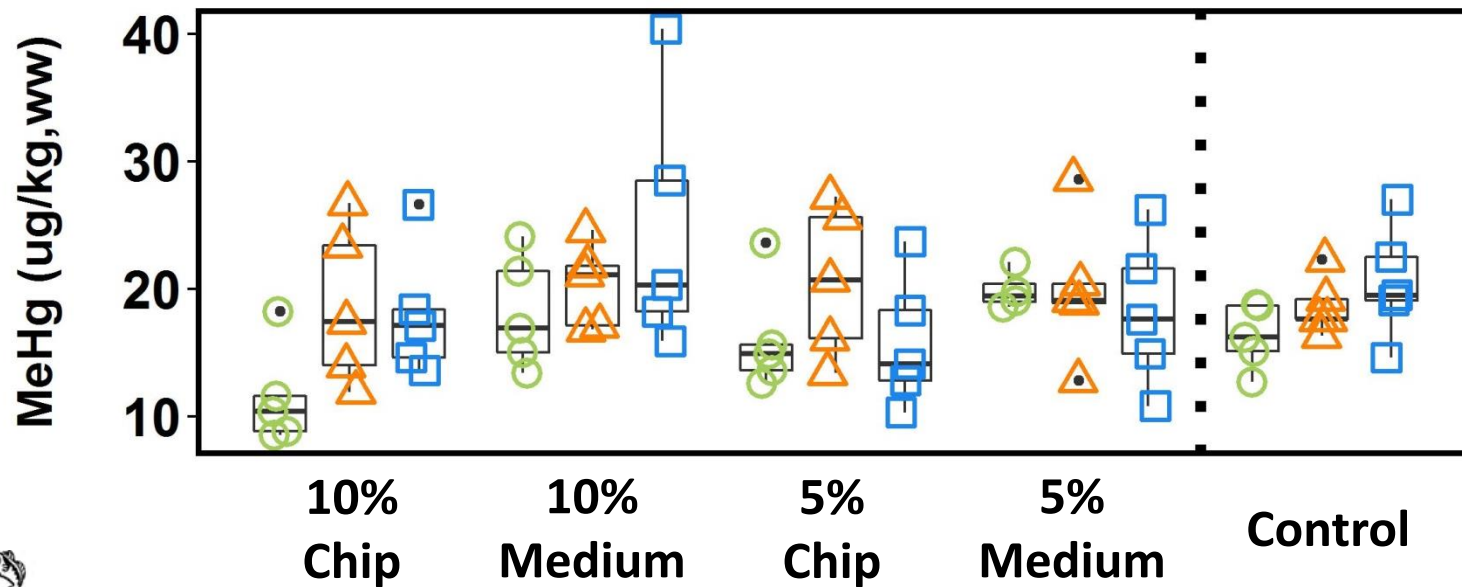
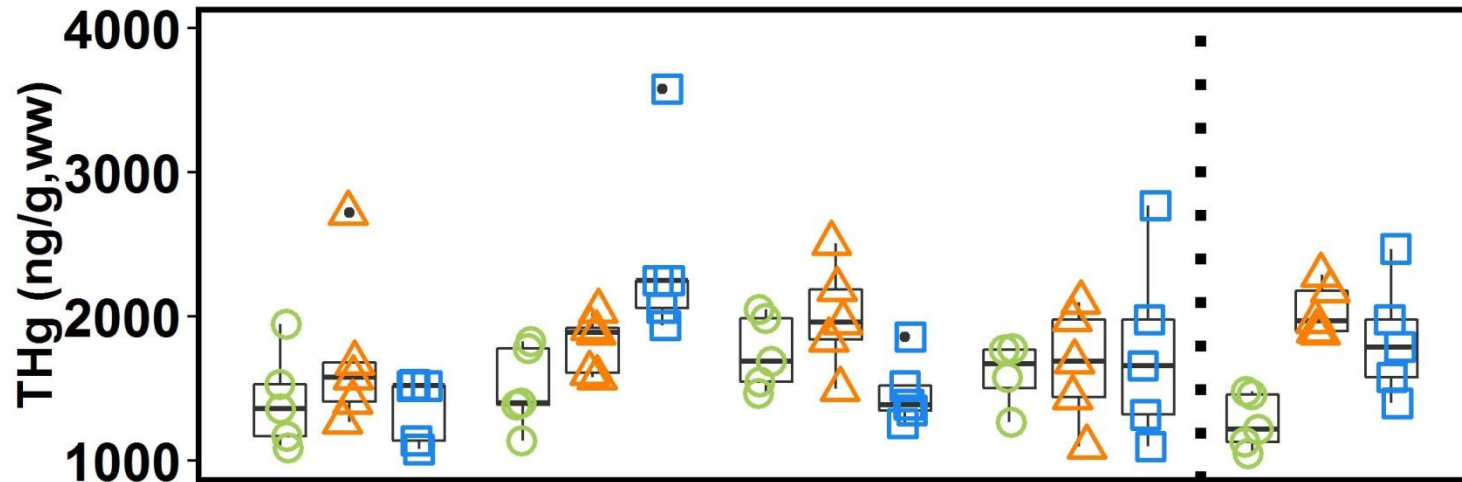
Unintended Consequences?



Soil



Adult Earthworm



Biota-Soil Accumulation Factor- Hg

