

# QUARTERLY PROGRESS REPORT

April/01/2011 – June/30/2011

## Effectiveness of two best management practices to slow down Pb weathering in a shooting range in Florida

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### OBJECTIVES

The overall objective of this study is to examine the effectiveness of two BMPs tested in the previous study. Though we demonstrated reduced weathering of Pb-bullets in sand berm compared to soil berm, there was a question on whether the weathered Pb was leached out from the berm as the sand berm has lower holding capacity than the soil berm, therefore causing less Pb accumulated in the sand berm. We have also demonstrated that sieving bullets significantly increased total Pb concentrations in the soil fraction; however, our data were from one location. More data are needed to confirm our observation. The specific objectives are to test the effectiveness of the following two BMPs in slowing down the bullet weathering:

1. Sand berm compared to soil berm.
2. Pb-bullets removal via different methods.

### WORK ACCOMPLISHED DURING THIS PERIOD

1. Finished the first column experiment by mixing the bullets with clean sand and soil under high and low rainfall conditions.
2. Analyzed Pb concentration in the leachates. In the first 2 months, leachates were collected every 2 weeks, and the last 2 months, they were collected every 4 weeks.
3. Analyzed the total and water-soluble Pb concentration from sand and soil before and after the 4-month column experiment.
4. Collected samples before and after recycling of Pb-bullet and Pb-shot from two ranges.
5. Analyzed total Pb contents in different size fractions.

### WORK TO BE ACCOMPLISHED DURING NEXT PERIOD

1. Finish the second leaching experiment by placing the bullets on the surface of clean sand and soil, and leach with stimulated rainfall.
2. In the first 2 months, samples will be collected every 2 weeks. They will be collected every 4 weeks in the last 2 months, and analyzed for water-soluble Pb.
3. Characterize the soil samples in very-coarse grain fraction (1-2 mm) using X-ray diffraction.