Innovative Technology Transfer Approach for a Background Soil Study in Puerto Rico

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Background/Objectives. Sharing technology and results from EPA research projects with stakeholders is an area of primary importance to enhance the agency's outreach efforts. The purpose of this project was to investigate background concentrations of metals in the soils of Puerto Rico and create a user friendly database so that stakeholders, such as contaminated site practitioners, can readily access the data when working on sites in Puerto Rico. The research team used a GIS-based tool called Story Map, an ESRI product that relies on ArcGIS and lets the user combine maps with narrative text, images, and multimedia content to analyze and share the results of this study with stakeholders.

Approach/Activities. Analytical data and geocoding on 301 background soil sampling locations and 2,058 samples were gathered from 18 Superfund and RCRA Corrective Action sites within Puerto Rico. The data were loaded onto Region 2's Superfund database, which uses an environmental data management software (EQuIS). Maps were then generated in GeoPlatform and the data were analyzed in the context of land use, known contaminated sites and geology by adding GIS layers. The interactive layered maps were then combined with text and photos in Story Map. The final step includes publishing the project's Story Map to EPA's webpage to allow stakeholders, ranging from the general public to scientists, to access and use the data.

Results/Lessons Learned. The use of Story Map to combine scientific data with GIS has allowed complex relationships between background metal concentrations and geology to be analyzed by EPA scientists. EPA has also been able to determine where data gaps lie in the data set. A second phase of the project will be to collect additional background data to supplement the existing information and fill gaps in geological and geographic coverage. Additionally, the use of Story Map has furthered the agency's goal of presenting information to stakeholders in a clear and transparent manner. Although the software application of Story Map is straight-forward and easy to use, several lessons were learned during this project. Initially the background data was going to be plotted on maps, however, as the project unfolded it became clear that single data points were not the most appropriate metric to display. A variety of approaches were then examined and a decision to provide both point estimates and graphs showing concentrations based on percentiles was included. In addition, although EPA has national and regional web platforms for sharing the information, smaller organizations may have less robust methods for viewing or sharing the Story Map.