**TRANSPORTATION POOLED FUND PROGRAM**

**QUARTERLY PROGRESS REPORT**

Lead Agency (FHWA or State DOT): Virginia DOT \_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_

**INSTRUCTIONS:**

*Project Managers and/or research project investigators should complete a quarterly progress report for each calendar quarter during which the projects are active. Please provide a project schedule status of the research activities tied to each task that is defined in the proposal; a percentage completion of each task; a concise discussion (2 or 3 sentences) of the current status, including accomplishments and problems encountered, if any. List all tasks, even if no work was done during this period.*

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| **Transportation Pooled Fund Program Project #**TPF-5(339) | **Transportation Pooled Fund Program - Report Period:**□Quarter 1 (January 1 – March 31)□Quarter 2 (April 1 – June 30)XQuarter 3 (July 1 – September 30)□Quarter 4 (October 1 – December 31) |
| **Project Title:**Contaminant Release from Storm Water Culvert Rehabilitation Technologies: Understanding Implications to the Environment and Long-Term Material Integrity |
| **Name of Project Manager(s):****Bridget Donaldson** | **Phone Number:****434-293-1922** | **E-Mail**Bridget.donaldson@vdot.virginia.gov |
| **Lead Agency Project ID:** | **Other Project ID (i.e., contract #):** | **Project Start Date:**3/2/2016 |
| **Original Project End Date:**3/31/2019 (not incorrect date on prev file) | **Current Project End Date:**3/31/2019 | **Number of Extensions:**0 |

Project schedule status:

X On schedule □ On revised schedule □ Ahead of schedule □ Behind schedule

Overall Project Statistics:

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|  **Total Project Budget** |  **Total Cost to Date for Project** |  **Percentage of Work**  **Completed to Date** |
| $630,000 | $43,678.40 | 7% |

***Quarterly*** Project Statistics:

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| **Total Project Expenses****and Percentage This Quarter** | **Total Amount of Funds****Expended This Quarter** | **Total Percentage of****Time Used to Date** |
| $34,591.62 and 5% | 34,591.62 | 7% |

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| **Project Description**:

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| Studies by a subset of DOTs have discovered that the installation of advanced polymeric materials such as spray-on coatings and cured-in-place lining (CIPP) processes can release toxic chemicals into the water conveyed by the culverts. Numerous additional anecdotal accounts from the U.S and other countries have been reported regarding adverse effects to the environment and wastewater facilities. DOTs lack information on the degree that chemical leaching affects polymeric material long-term structural performance. Recent studies have shown some of the chemicals released into the environment by culvert rehabilitation polymeric materials are product ingredients intended to promote material strength and durability.**Objectives:**The primary project objectives are to determine the following: (1) The scope of the problem across DOTs (i.e., the extent of use of these technologies and the scale of their impacts to water quality); (2) The effectiveness of existing construction specifications at minimizing contaminant release from rehabilitated culverts; and (3) The degree to which the structural integrity and longevity of rehabilitated culverts are compromised by chemical leaching. Results of this project will enable DOTs to make informed decisions with regard to culvert rehabilitation selection and specification development.  |
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| **Progress this Quarter (includes meetings, work plan status, contract status, significant progress, etc.):**The project team hired a Materials Engineering student and began discussions with resin suppliers to provide us materials. The project team also met in person with a resin manufacturer to discuss ways to collaborate and leverage their respective knowledge to benefit this project.Here is the progress of CIPP field work:1. A CIPP installation was completed in the State of Kansas but the Pooled Fund project contact at Kansas was not

made aware the activity was occurring in time to notify the Purdue team. Another site in KS is expected in 2017. 1. The State of North Carolina has dedicated a person to coordinate CIPP testing site for CY 2017, hopefully in the

Spring. The Purdue team had a conference call with this individual and NC DOT.1. Virginia has indicated that a CIPP field site would be available for monitoring in the Spring 2017.
2. CALTRANS indicated that their 2016 is too busy and that a CIPP field site could be available in 2017.
3. Ohio has indicated that the CIPP field work is not possible, but will contribute to other aspects of this project.
4. New York State has plans to coordinate with their maintenance division to setup a project team field

Visit to CIPP sites in 2017.1. The Purdue team contacted and received CIPP bid documents and specifications from Colorado DOT.
2. The Purdue team contacted Missouri, Wisconsin, and other states to obtain specifications and bid documents.

The team is awaiting response from those states. This information will be compiled so that the Pooled Fund project can use it to understand how other states are approaching specifications and contracts.The Purdue team is assembling the following information provided by states. The Purdue team needs all states to provide:1. Three submittals for approved and completed CIPP projects for each state
2. Contract specifications used for bidding CIPP projects for states.
3. Product testing requirements for CIPP for each state

The Purdue team traveled to California to collect CIPP resin (cured, uncured) and condensate to analyze. This was necessary so that the methods could be validated and setup for multiple CIPP sites involved in this project. It is important to characterize these matrices because they should provide insight into the types of contaminants that could be released from CIPP activities into the environment. In order to limit environmental contamination, it is needed to understand what compounds could be released.Some field environmental sampling supplies were ordered and methods supplies were used to setup analytical capabilities for the testing. One graduate student was paid from the contract and some student travel was expended for the field work. The project team is currently analyzing samples and data. Once complete, interpretation and reporting will occur. |
| **Anticipated work next quarter**:The project team plans to:Complete analytical methods for characterizing field samples and generate data for uncured resin and cured CIPP collecting in California.Setup field site visits with participating states and conduct a site visit. Possibly, based on whether or not a site visit is conducted begin analyzing exhumed materials in the laboratory.*It is important that the states and project team identify field visits as soon as possible so that environmental monitoring* *and sampling collection and analysis can be conducted. Obtaining samples is critical to the successful completion* *of this project.* |
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| **Significant Results:**For this quarter, methods are almost established. Some preliminary data was obtained. No reportable results at this time. |
| **Circumstance affecting project or budget. (Please describe any challenges encountered or anticipated that** **might affect the completion of the project within the time, scope and fiscal constraints set forth in the** **agreement, along with recommended solutions to those problems).**The challenge has been scheduling the site visits. The project team is waiting on states to identify field sites with enough lead time so that the Purdue team can travel and conduct testing. The project should be completed on time, though the ability to keep on the initial project scope will be determined by the ability of the states and project team to coordinate site visits and opportunities for sampling. |

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| **Potential Implementation:** The findings from this study will be used to provide DOTs two forms of guidance: (1) a final report that will include recommended construction specifications to minimize environmental impacts and maximize performance, and (2) a hands-on training workshop about current and emerging culvert rehabilitation technologies, specification considerations, and factors to consider for environmental and structural performance. |