



SPR RESEARCH PROGRAM SECOND-STAGE PROBLEM STATEMENT FY 2009

ODOT Research Unit
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I. PROBLEM NUMBER

GHE-09-24

II. PROBLEM TITLE

Reuse of Asphalt Grindings and Lead-painted Concrete Demolition Debris

III. RESEARCH PROBLEM STATEMENT

DEQ plans to review the reuse options for two of ODOT's largest debris types – asphalt grindings and painted concrete. DEQ has concerns that asphalt grindings may leach fine particles containing asphalt into streams to be consumed by fish and they are considering management and reuse guidelines that may somewhat restrict ODOT's management options. Similarly, limited data is available regarding the leaching of lead from painted concrete debris, so DEQ has recommended fairly conservative best management practices for concrete reuse until better data is available. In both cases DEQ is willing to work with ODOT but needs more information and defensible data in order to defend more flexible reuse options and management practices. Both waste streams are very significant for ODOT and other local agencies in Oregon, and limitations on their reuse could increase agency costs and liability. In addition, the Governor's sustainability goals encourage reuse and minimizing impacts to natural resources. Such reuse reduces project costs, as well as providing environmental benefits. It avoids the need to purchase virgin materials, reduces transportation of wastes and virgin materials, and minimizes landfill costs. Therefore, there would be significant benefit to ODOT in obtaining enough data to support expanded reuse options for asphalt grindings and concrete debris. DEQ has provided written support for similar research in the past and does want to use such data to support wider reuse options in support of Oregon's sustainability goals, which is to the benefit of both agencies.

IV. RESEARCH OBJECTIVES

Establish new ways, and validate existing ways, in which ODOT can reuse asphalt grindings and lead-painted concrete debris without adverse environmental impacts.

V. WORK TASKS, COST ESTIMATE AND DURATION

(Note: the budgets for tasks 1 through 3 may seem high. This is due to the likely multidisciplinary nature of this work. There are likely to be two or more PIs and two or more graduate students working on different aspects of this project simultaneously. i.e. a water quality professor and student and a biology professor and student)

Task 1: Define Specific Data Needs – \$8,000

Work with DEQ to determine the type of data needed to help expand reuse options. Establish which options are open to consideration and which are non-negotiable. For those options under consideration, establish exactly what testing and results would result in approval.

Task 2: Research State-of-the-Practice – \$8,000

Research rules and guidance available in other states regarding reuse options for asphalt grindings and lead-painted concrete debris. Discover the exact basis for the adoption of the rules and guidance.

Task 3: Literature Review – \$15,000

Research the existing literature and data regarding leachates and run-off from asphalt grindings and lead-painted concrete debris. Determine the validity of DEQ's perception of a lack of data and research in the options under consideration. Determine if the basis for other state's rules and guidance is supported by sound research. Determine whether or not more recent research supports or opposes those same rules and guidance.

Task 4: Laboratory Testing - \$60,000

Conduct laboratory leachate tests on lead-painted concrete debris with the characteristics of ODOT materials. Vary leaching conditions to reflect the various uses under consideration. Also conduct any toxicity and sediment mobility tests that have been shown to be useful or needed through tasks 1 through 3.

Task 5: Field Testing – \$160,000

Measure particulate run off and leachate from asphalt grindings and painted concrete debris in test placements, similar to candidate fill uses. Such sampling may include installation of perforated pipes or other leachate collection systems within test installations of asphalt grindings and concrete debris, with subsequent sample collection during rain events. It might also include stream and biologic organism sampling.

Task 6: Final Report - \$25,000

Summarize the results of literature review and laboratory testing in a final report. This with interpretations of the implications for changing the use, reuse, and disposal of lead painted concrete and asphalt grindings.

Task 7. Research Administration - \$14,000

Work Task Cost Estimate Duration	
1. <i>Define Specific Data Needs</i>	\$8,000 2 months
2. <i>Research State-of-the-Practice (duration overlaps with task 1)</i>	\$8,000 3 months
3. <i>Literature Review (duration overlaps with tasks 1 and 2)</i>	\$15,000 4 months
4. <i>Laboratory Testing</i>	\$60,000 3 months
5. <i>Field Testing</i>	\$160,000 20 months
6. <i>Final Report</i>	\$25,000 3 months
7. <i>Research Administration</i>	\$14,000 30 months
Time & Budget: 30months & \$290,000 (FY09-\$156; FY10-\$84; FY11-\$50)	

VI. IMPLEMENTATION

ODOT already owns, produces, and is trying to use large volumes of the types of materials proposed for testing. ODOT needs to be armed with the data necessary to convince the environmental regulators to allow their use in additional ways.

VII. POTENTIAL BENEFITS

The development of defensible real world data should open up more asphalt and concrete reuse options for construction and maintenance projects; thereby reducing construction costs (or avoiding new costs) and supporting Oregon’s sustainability goals.

VIII. SUBMITTED BY

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