

# FY 2010 RESEARCH PROBLEM STATEMENT

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## TITLE ([more info](#))

**Low Impact Development (LID) Practice Compilation for Highway Design, Construction and Maintenance**

## PROBLEM (Description of need) ([more info](#))

Low Impact Development (LID) is a 'green' model for handling stormwater runoff quantity and quality based on mimicking natural hydrologic processes as much as possible in situ. LID can be described as a set of goals and practices which reduce environmental and other concerns from the additional runoff caused by development. These practices can be integrated with other agency environmental and societal goals so that the combined practice is also economical. Large stormwater runoff handlers such as DOTs are now looking to the adoption of LID practices to comply with the federal law requirements of NPDES (National Pollutant Discharge Elimination System.) There is also much interest in using LID to handle potential future issues which may occur due to climate change. Although many LID design guides are being developed, few focus on the unique needs of linear highway projects. As ODOT managers, designers, and construction and maintenance personnel start to embrace LID, it would be helpful to develop a Roadmap which can be used to educate them in the various practices which might be adopted, and give guidance on associated design criteria, calculations and additional benefits/concerns. This problem statement focuses on the compilation of LID practices which might be applicable for linear project uses.

## PROPOSED RESEARCH, DEVELOPMENT OR TECHNOLOGY TRANSFER ACTIVITY ([more info](#))

The proposed project is a combination of a research/design/best practices search and compilation into the format of an educational tool that can be used by ODOT. The compilation will focus on practices in regions with similar conditions as exist in Oregon. The intent is to then compile the LID practices into a guidance that will list the practices with example designs, case studies and calculations related to the hydrological characteristics and water quality control. In addition, these lists will contain information on other associated benefits/concerns such as urban heat island issues, constructability, maintenance, habitat etc. The format of the tool will be similar to some of the current green rating systems such as the USGBC LEED(TM) and the Sustainable Sites Initiative so that the practices can be more readily adapted into future programs such as a Green Highway Initiative which various agencies and NCHRP are currently looking into. There are many groups and agencies already looking into LID practices which can be used as resources for information. Some examples are the Puget Sound LID Manual, the Prince George County LID manual, the DOD LID manual, the Portland LID Design Guide, etc. Many of the practices in these guidances can be directly used for DOT applications similar to other forms of development such as the construction of a highway rest area, but most do not focus on the unique issues of linear projects. Therefore the practices will be selectively organized to reflect the needs of the DOT. Their selection will be based on related highway research on shoulders and ROW environmental issues which can give insight into agency runoff control needs. Of course, there will also be the component of having the ideas reviewed by various DOT groups so that they fit in with ODOT facilities and other goals such as safety and access.

## BENEFITS ([more info](#))

This project will benefit ODOT in many ways. It will serve as a clearinghouse to collect many of the LID and other beneficial environmental principles that are currently being developed by many groups within ODOT and its consultants. It will also bring together LID practices developed by others which might be adopted by the agency to more economically serve various purposes, be they environmental, societal or agency missions. The compiled guidance of LID techniques may then serve as a springboard for future development of a Roadmap for comprehensive agency LID strategies so that future projects and operations can more readily address current and future environmental impacts, be they on the environment from the ODOT built facilities, or on the ODOT facilities from the forces of nature. Compiling the guidance in a manner similar to environmental rating systems that are currently being adopted for other applications, and which are being considered for future 'green' transportation needs, will facilitate the incorporation of a LID roadmap into green highway initiatives of the future, such as assessment tools that can be used to evaluate overall sustainability within the Environment Management System (EMS) structure of the agency.

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Problem Statement Number: