

## Stormwater Management Program – Research & Monitoring

### Facilities Monitoring

ODOT Maintenance conducts formal inspections of stormwater drainage facilities, including roadside ditches, once every three years to ensure that they continue to provide their intended Level of Service (LoS). The LoS Manual provides guidance for inspections. Water quality issues, particularly unlawful discharges, are included in the inspections. The LoS manual is undergoing revisions to specifically include direction on identification and documentation of water quality problems. The revision is expected to be completed in 2010.

Along with the formal, scheduled inspections, Maintenance crews are constantly observing and inspecting roadside drainage facilities as part of their day-to-day duties. Almost all of the discovered illicit discharges to ODOT's drainage system were found by Maintenance during routine activities. When illicit discharges are identified, the Maintenance crew notifies the Maintenance Supervisor, who then determines the appropriate course of action needed to eliminate the discharge.

### Water Quality Monitoring and Research

ODOT's water quality-related monitoring programs have two purposes. The first is to increase our understanding of the nature of highway runoff and its constituents. This helps in:

- Assessing the impact of highways on the environment,
- Selecting appropriate treatment techniques, and
- Developing more effective treatment strategies.

The second purpose is to help manage the existing stormwater treatment systems and ensure that they are functioning properly.

Characterization studies of ODOT highway runoff were first conducted in 1995 at two urban highway sites; I-5 in Portland and I-105 in Eugene, along with some sampling of snow along highway 26 near Mt. Hood. The results of this sampling are presented in ODOT Highway Runoff Monitoring 1995. ODOT monitored highway runoff at three locations from 2008 to 2010:

- The site on the I-5 corridor in Portland that has previously as monitored in 1995,
- A rural site on Highway 26 at Wemme, and
- A central Oregon urban site in Bend.

Characterization monitoring of highway runoff at 4 locations, covering high, medium and low traffic highways and an eastern/central Oregon highway will begin in the summer of 2011 and continue for 5 years. The sites may be changed during that period to gain information from a wider range of conditions.

ODOT is continually looking at new methods or Best Management Practices (BMPs) to better manage highway runoff. A popular new BMP being used to filter and remove stormwater pollutants entails adding special soil mixes to highway ditches, shoulders, or other parts of the highway drainage system. Stormwater flows through the special soil mix and the soil filters pollutants from the stormwater prior to reaching nearby streams and waterways.

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ODOT is investigating a BMP that uses fish bone meal as part of the special soil mix to remove copper from stormwater. A complete description of this project can be found at the ODOT Research website: (GHE-10-19)

ODOT will be installing this BMP on the Sunset Highway (Hwy 26) as part of a highway construction project planned for summer 2010 in the Portland/Beaverton area. ODOT will monitor stormwater within and near the project area before the BMP is installed and then go back after it is in place to do more monitoring to determine the BMP's effectiveness. Research is expected to last at least two years after construction of the BMP and will provide valuable information about how well fish bone meal removes dissolved copper as well as other useful information about ODOT stormwater and ditch drainage systems.

Funding has also been allocated for the establishment of a test site to monitor the effectiveness and long term maintenance requirements of proprietary stormwater treatment systems.

Additional monitoring and research has been conducted under the auspices of the ODOT Research Unit. Ongoing and completed project topics related to highway runoff quality include:

- [663- Copper Toxicity and ESA Listed Salmon](#)
- [March 2001 Stormwater Management Research & Monitoring Resource: Herbicide Use in the Management of Roadside Vegetation, Western Oregon, 1999-2000: Effects on the Water Quality of Nearby Streams](#)
- [January 2007 "Water Quality Facility Investigation" Final Report](#)
- [December 2006 "Water Quality Facility Investigation" Summary Report](#)
- [March 2001 "Roadwaste Management: Field Trials" Final Report](#)
- [October 2000 "Roadwaste Management: A Tool for Developing District Plans"](#)
- [June 1998 "Roadwaste: Issues and Options" Interim Report](#)
- [July 1998 "Management of Stormwater Facility Maintenance Residuals" Final Report](#)
- [October 2005 "Assessing the Effectiveness and Environmental Impacts of Using Natural Flocculants to Manage Turbidity" Final Report](#)
- [January 2008 "Mapping of Rainfall Analysis for Oregon" Final Report](#)

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