AirTAP Airport Technical Assistance Program

AirTAP Briefings

University of Minnesota
CTS Center for Transportation Studies

A publication of the Airport Technical Assistance Program of the Center for Transportation Studies at the University of Minnesota **Fall 2006**

Erosion Control for Airports

Soil loss can take a toll on airport and surrounding area

Erosion can be a problem in many airfield areas. Erosion and sedimentation affect local water quality, the health and appearance of airfield areas, and the structural integrity of the site. Effective erosion control requires an integrated approach that takes into account government regulations and erosion control methods (see examples in Figs. 1 and 2). This article outlines several considerations for erosion control at airports.

Erosion is caused when soil is washed away by wind or water, resulting in deposited sediment. During a rainfall, bare soil can lose up to 100 times more sediment than well-vegetated soil. Established vegetation preserves soil and reduces the effects of erosion.

During construction, erosion is a bigger problem. The erosion rate per acre on construction sites is much greater than on agricultural land due to steeper slopes, smoother surfaces, and more impervious areas. Construction sites erode mainly during the brief period from when the land is cleared until the new soil surface is stabilized. Sedimentation may have a lasting effect, however, on the channel shape of a stream as well as on the construction project and on the water environment downstream.

Regulation and permitting

A number of agencies regulate erosion and sedimentation within Minnesota. These agencies include the Minnesota Pollution Control Agency (MPCA), County Soil and Water Conservation Districts, Watershed Management Organizations, and local cities and counties.

NPDES permits

The National Pollutant Discharge Elimination System (NPDES) program was implemented by the U.S. Environmental Protection Agency and is administered locally by the MPCA. The purpose of an NPDES permit is to preserve, protect, and improve water quality. The NPDES program requires an NPDES storm water permit for construction activities that disturb more than one acre of land. (Disturbance includes grading, clearing, and excavation, apart from agricultural activities. Disturbance of the area need not be contiguous, so the entire project corridor must be evaluated to determine the amount of disturbance anticipated.) As part of the permit process, the airport owner must develop a storm water pollution prevention plan (SWPPP) incorporating best management practices for sediment and erosion control.

Application process

The application process is outlined at left. More information and a permit application are available on the MPCA Web site at www.pca.state.mn.us.

Other local government units

In a number of areas within Minnesota, existing Watershed Management Organizations (WMOs) have rules pertaining to erosion control. Most of these WMOs are located within the Twin Cities, although some are located in greater Minnesota (see Fig. 3). To find out if there is a WMO in the area, contact the Minnesota Board of Water and Soil Resources at www.bwsr.state.mn.us. Because each WMO has different requirements, the governing WMO should be contacted early in the planning process so that its specific requirements are incorporated into the project.

Many cities, townships, and counties have their own policies on erosion and sedimentation control. To determine if a local government has rules or policies in place, call the local city hall or county offices.

Designing an erosion control plan and treatment considerations

Any control plan must contain sufficient information to effectively address erosion and sedimentation. The length and complexity of the plan should be in line with the size of the project, the severity of the site conditions, and the potential for offsite drainage. The greatest level of planning and detail should be evident on plans for projects that are directly adjacent to sensitive areas.

Steps for erosion control plan development include:

Step 1. Determine what agencies will be involved in issuing permits. Identify the requirements the project will need to meet.

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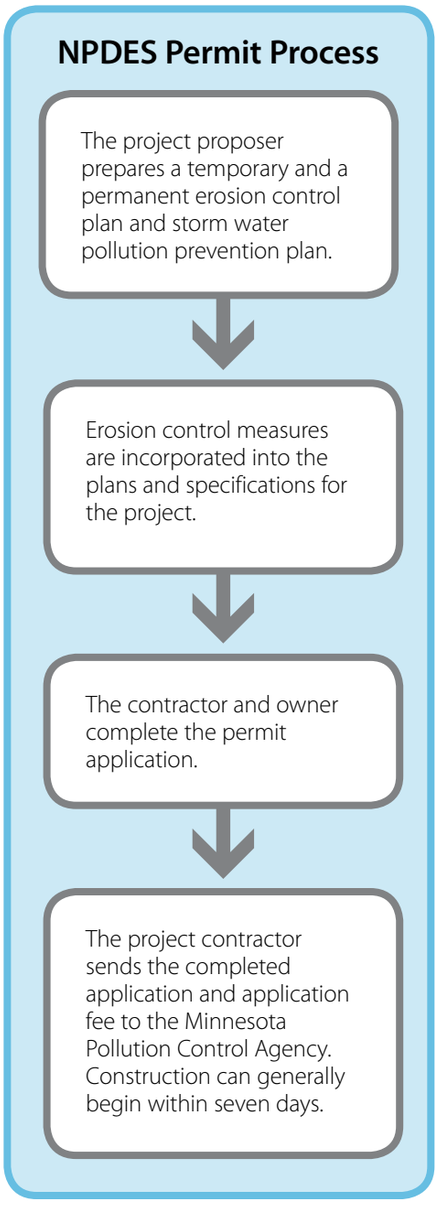

Managing Airport Storm Water Featured at October Fall Forum

Join us for a session on managing airport storm water at this year's AirTAP Fall Forum. The session will be held on Thursday, October 12, from 10:30–11:30 a.m.

Discussion will include NPDES permit requirements and other rules for general aviation airports; how to develop a storm water pollution prevention plan (SWPPP); when hiring a consultant is a good idea; how agriculture spraying is affected by environmental rules; and how to develop a Spill Prevention Control and Countermeasures (SPCC) plan for fuel systems.

Speakers will include Julie Randala from the Minnesota Pollution Control Agency, Todd Hubmer of WSB, and Roy Fuhrmann from the Metropolitan Airports Commission.

Step 2. Identify any site constraints, potential erosion problem areas, or natural features within the site. Determine what temporary and permanent erosion control measures these areas will need.

Step 3. Determine any other needed temporary and permanent erosion control methods to meet local and state regulations.

Step 4. Include all erosion control measures for the project within the construction plans. Provide details and specifications of each erosion control method.

Step 5. Include erosion control measures in the project special provisions specifications. This is the narrative part of the erosion control plan and should contain information that is not communicated through drawings or standard specifications.

Guidelines for the selection and use of temporary and permanent erosion control methods can be found in several resources, including the *Erosion Control Handbook for Local Roads*, published by the Minnesota Local Road Research Board and available online at www.dot.state.mn.us/environment/publications.html.

Fig. 1. Detention ponds temporarily store and treat storm water until it can be discharged.

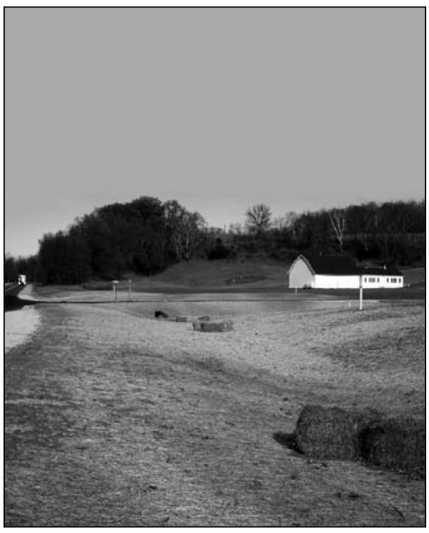

Fig. 2. Ditches direct water away from the roadway base. Hay bales in the ditch reduce flow velocity.

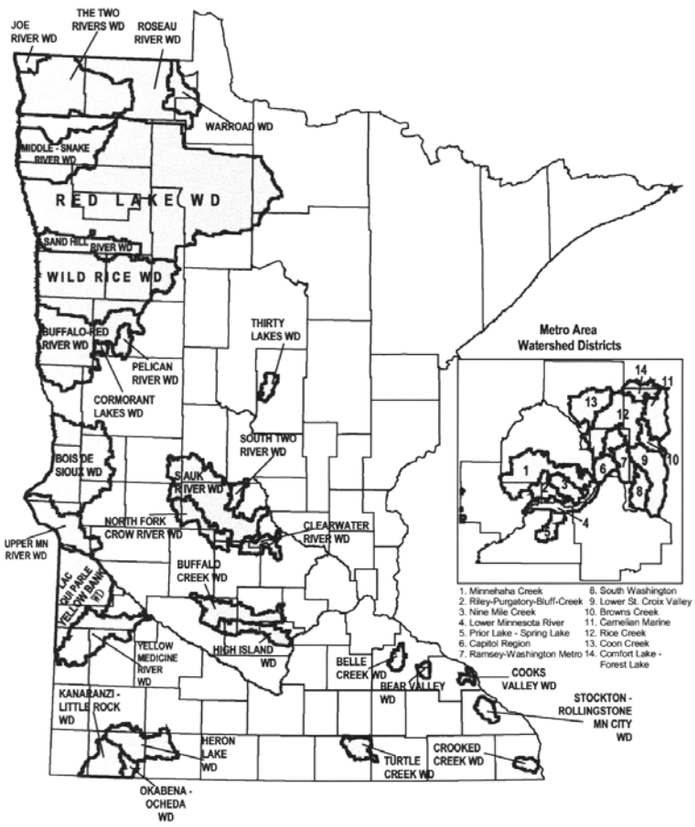

Fig. 3. Minnesota's watershed districts

AirTAP was developed through the joint efforts of the Minnesota Department of Transportation (Mn/DOT), the Minnesota Council of Airports (MCOA), and the Center for Transportation Studies (CTS).

Briefings is published quarterly in print and online.
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