Chapter 14

Stormwater Discharge Permitting - Experiences in a Rural Western State

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This chapter presents an evaluation of the performance of the stormwater permitting program in Montana, a rural western state. Stormwater program implementation in rural areas presents different challenges than those encountered in urban areas. The types of facilities, the types of stormwater discharge conveyances, and the resources available to address stormwater may be very different from urban areas. The chapter will discuss: the legal basis for Montana's stormwater program, the types of stormwater discharge permits available, the applicability of the various permits, the compliance activities permittees must conduct, the success of the program in achieving its goals, precautions for stormwater modelers working in Montana and similar areas, and the fee system that supports the program.

14.1 Background Information

Montana is the fourth largest state in the union with a total area of 147,138 square miles (380,200 km²). It is approximately 630 miles (1,013 km) wide, nearly the distance from New York City to Chicago. For all its size, Montana has a population of only about 799,000, less than one-fourth the population of the Toronto metropolitan area where this conference was held. Its low population density qualifies Montana as a rural state and means that stormwater discharges from paved urban areas via storm sewers are the exception rather than the rule.

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The Stormwater Program staff to manage stormwater discharges over this area is based in the capital city, Helena, shown in the southwestern part of the state on Figure 14.1. The Stormwater Program is part of the Water Quality Division of Montana's Department of Environmental Quality. The program staff consists of two professionals and a half-time support person.

Figure 14.1 Location map of Montana, showing capital city Helena.

Its size allows Montana to span several physiographic provinces. As depicted in Figure 14.2, the Rocky Mountain province covers the western one-third of the state and consists of rugged, high mountains and intermontane valleys. The eastern two-thirds of Montana are broadly split between glaciated plains to the north and unglaciated plains to the south. The highest mountains exceed 12,000 feet (3,600 m) in elevation and the plains are generally 2,000 to 4,000 feet (600-1,200 m) in elevation, but typical local relief is 3,000 to 4,000 feet (900-1,200 m). The thick blanket of till deposited by the continental glaciers on the northern plains creates different soil conditions from those on the unglaciated plains to the south and the mountainous regions to the west. Extreme intensities of wind, precipitation and snow melt coupled with sparse vegetative cover impart a high potential for wind and water erosion to Montana soils (Montagne, 1982). Eight of the world's ten soil orders and about 40 of the world's 200 great groups are recognized in Montana (Montagne, 1982). The different soils give rise to different potentials for erosion and sedimentation. The different provinces are subject also to different weather patterns.

The plains, which cover the eastern two-thirds of the state, can be characterized as a semi-arid continental climate. It generally is characterized as cool and dry with great extremes in temperature. Summer highs can be well over 100° F (40°C) and winter lows often dip below -20° F (-30°C). Because of chinooks,

Figure 14.2 Major physiographic provinces in Montana.

warm winds caused by compression of air masses lifted and dropped over the mountains, great temperature extremes can occur in a very short period of time. For example, several years ago the afternoon temperature was 54° F (12°C) while I was conducting a January inspection; when I arrived home about five hours later the temperature had dropped to -18° F (-28°C), a change of over 70° F (21°C) in a matter of hours!

The climate in the mountainous western third of the state varies greatly from place to place. The orographic precipitation in mountainous western Montana occurs mostly as snow; snowmelt is considered stormwater in Montana. The city of Helena receives about 12 to 14 inches (305-355 mm) of moisture per year, while nearby mountains may accumulate 30 to 40 inches (760-1020 mm) of moisture and the portion of the valley 12 miles (19 km) north of town annually receives only 6 inches (914 mm) of moisture. Because the orographic snowstorms deposit most of their moisture in the western mountains, the eastern portion of the state is in a rain shadow. While the eastern portion of the state generally is drier, the plains are subject to short-duration, high-intensity rainstorms. The type of precipitation (rain versus snow), the different amounts of total precipitation, and the duration and intensity of the storms all affect stormwater discharges in Montana.

The great diversity in distribution of moisture and the extreme variability in conditions possible in relatively small distances can create great difficulty for modelers unaware of these properties and of the need to adjust model input data

parameters to reflect local conditions. This point will be discussed more in section 14.5.

14.2 Montana's Stormwater Discharge Permit Program

This section presents an overview of Montana's stormwater discharge permit program. The legal basis for the program, the types of stormwater discharge permits available, the permit applicability, and required compliance activities will be discussed.

14.2.1 Legal Basis for the Stormwater Program

The federal Clean Water Act is administered in Montana under the Montana Water Quality Act. The Water Quality Act (the Act) states that *it is unlawful to carry on any of the following activities without a current permit from the department:...discharge sewage, industrial wastes, or other wastes into any state waters.* As used in the Act, *state waters* means *any body of water...either surface or underground* and includes perennial, intermittent, and ephemeral streams, lakes, ponds, and wetlands.

Industrial waste is defined in the Act as *any waste substance from the process of business or industry or from the development of any natural resource, together with any sewage that may be present.* Mine tailings washing off a historic mine tailing dam is an example of an industrial waste encountered in Montana.

Other waste is defined in the Act in an extensive listing that includes *...sediment...and all other substances that may pollute state waters.* Sediment generated from the log deck yard at a sawmill or from a construction site is an example of *other waste* in Montana.

Montana assumed primacy for federal Clean Water Act implementation through its Montana Pollutant Discharge Elimination System (MPDES) permit program in 1974. Since 1992, the MPDES Stormwater Program has issued permits for point source discharges of industrial wastes and other wastes in stormwater to state waters.

14.2.2 Types of MPDES Stormwater Permits

Montana has three types of MPDES permits: a traditional *individual discharge permit*, an *individual discharge permit for stormwater*, and a *general discharge permit for stormwater*. The characteristics of each of these types of permit follows:

1. The *traditional MPDES individual discharge permit* is facility specific; it is a custom permit written to address site-specific

conditions. This permit has numerical effluent limits set for discharge quality. Each traditional MPDES permit must go through a public notice and comment process. This permit can cover industrial, commercial or municipal discharges and can incorporate stormwater discharge provisions.

2. The *MPDES individual discharge permit for stormwater* is also facility specific and, like the traditional MPDES individual discharge permit, has numeric effluent limits set for discharge quality. This permit also goes through the public notice and comment process. Coverage under this permit is limited to stormwater discharges.
3. The *MPDES general discharge permit for stormwater* is not facility specific; one general permit covers all facilities statewide engaged in a general type of activity. Discharge authorizations are issued to each eligible facility under the general permit. MPDES permits contain a *statement of basis* that records the rationale used to develop the discharge limits for pollutants. No effluent limits are set because the statement of basis for the general permits assumes that implementation of best management practices (BMPs) will reduce or eliminate the waste discharges to acceptable levels. Although the general permit goes through the public notice and comment process, the facility-specific discharge authorizations do not.

To date, three general permits for stormwater discharge have been issued in Montana, for stormwater associated with: *Industrial Activity*, *Mining and with Oil and Gas Activities*, and *Construction Activity*.

14.2.3 Applicability of Types of MPDES Permits

The various types of MPDES permits can provide coverage for stormwater discharges from different types of facilities and discharge problems.

While stormwater discharge permitting is a relatively new concept, many facilities are already covered by a traditional MPDES discharge permit. The traditional MPDES discharge permit can incorporate stormwater provisions with effluent limits. This approach may appeal to facilities that wish to consolidate discharge coverage into one permit.

The MPDES individual discharge permit for stormwater allows a facility to obtain stormwater discharge coverage tailored to the facility's need. This permit has effluent limits set and may be most appropriate for covering discharges that cannot be addressed by the general permits.

The MPDES general discharge permits for stormwater apply to listed industries that discharge stormwater as a point source to state surface waters (discharges to ground water that is hydrologically connected to surface water can also be covered under these permits). As mentioned above, Montana presently has three general permits to cover stormwater discharges.

The MPDES General Discharge Permit for Stormwater Associated with Industrial Activity applies to eleven broad categories of industries listed in the Federal Register at 40 CFR 122. The facility must discharge stormwater as a point source to state surface waters. A point source conveyance in Montana is often a road borrow ditch, swale, gully, or ephemeral drainage. Typical Montana industrial facilities seeking general discharge permit coverage include trucking companies, sawmills, ready-mix cement plants, auto salvage yards, and petroleum refineries.

The MPDES General Discharge Permit for Stormwater Associated with Mining and with Oil and Gas Activities applies to all mining and milling facilities, and to oil and gas exploration, production, processing, treatment operation or transmission facilities. Because the oil and gas industry has had limited activity in Montana for several years, the majority of discharge authorizations under this general permit have been issued to mining facilities. This permit will be referred to as the mining permit for the sake of brevity in the remainder of this chapter. General permit coverage applies to active, inactive, and abandoned mine and mill sites. The mining general permit also contains a provision for coverage of construction activity because development of a mining property often involves construction activities. This general permit does not apply to those discharges that are subject to effluent limit guidelines, such as process waters, which are classed as mine drainage and which must be covered under an individual permit. The general permit does cover storm discharges from topsoil stockpiles, access roads, and similar disturbances on mine sites.

The MPDES General Discharge Permit for Stormwater Associated with Construction Activity covers construction activities including clearing, grading, or excavating which will result in the disturbance of a total of five or more acres or the disturbance of greater than one acre if located less than 100 feet from state waters. This general permit does not require sampling and analysis because construction disturbances are typically of relatively short duration.

From the permittee's point of view, general permit coverage is faster and easier to obtain because it doesn't require a public comment period for each application. General permit coverage can also be less expensive because of less rigorous monitoring and reporting requirements and lower fees. However, facilities already covered under an individual MPDES permit for other types of discharges may wish to include stormwater coverage in its existing permit for convenience in record keeping. Also, some facilities may seek coverage under an individual permit because existing sampling data indicate that general permit coverage is inappropriate.

The evaluation of program success contained in this chapter will be restricted to the general discharge permits for stormwater associated with industrial activity, and with mining and with oil and gas activities because sample analyses data are available only for those permits.

14.2.4 Compliance Activities Required Under the General Discharge Permits for Stormwater

Existing facilities seeking stormwater discharge coverage were required to submit an application by 1 October 1992. New source applications are due 30 days prior to commencement of facility operations. After a facility is authorized to discharge stormwater under a general discharge permit, it must conduct the following compliance activities.

Under the industrial and mining general discharge permits, a stormwater pollution prevention plan (SWPPP) must be submitted for new facilities 30 days prior to commencement of operations and be implemented on commencement of operations. For existing facilities, the SWPPP is due within 180 days following receipt of discharge authorization and must provide for implementation within 365 days of authorization.

The construction general discharge permit requires that an erosion control plan (ECP) be submitted that will minimize the erosion of disturbed land during the construction and post construction activities and which will minimize the discharge of pollutants such as fuels, fertilizer, pesticides, etc. to surface waters. The ECP must be implemented on commencement of operations.

The general discharge permits for industrial and mining activities require monitoring to verify the effectiveness of BMP implementation at minimizing or eliminating waste discharges via stormwater runoff. The required monitoring includes stormwater discharge sampling and an annual comprehensive site inspection. Sampling frequency is determined on a case-by-case basis. If monitoring indicates that BMP implementation is ineffective at controlling waste discharges in stormwater, then the individual permit approach with effluent limits may be more appropriate. The construction general discharge permit requires inspection of BMPs and stormwater runoff during and after stormwater discharge events.

The general discharge permits for industrial and mining activities require reporting the results of stormwater sample analysis and of the comprehensive annual site evaluation. The general discharge permit for construction activity requires annual reporting of the results of site inspections if the activity lasts more than 12 months.

14.3 Evaluation of Program Success

The following evaluation of program success is intended to provide a means to measure the effectiveness of Montana's permit program at achieving compliance with the general discharge permit requirements and, importantly, at attaining the stormwater discharge quality goals. This section will consider the number of discharge authorizations applied for and issued, compliance with the requirements

to prepare and submit a SWPPP, and success at meeting the permit goal of minimizing or eliminating waste discharges in stormwater.

14.3.1 Discharge Authorization Application and Issuance

Montana has received 370 applications for coverage under the industrial general permit, 183 applications under the mining general permit, and 197 under the construction general permit. Of these applications, discharge authorizations were issued for 196 industrial facilities (53%), 74 mining facilities (40%), and 188 construction projects (95%). Those facilities that did not qualify for permit coverage typically were either not a listed industry covered under the permit or did not generate a point source discharge of stormwater to state waters. The 270 industrial and mining facilities authorized to discharge under the general discharge permits will be further discussed below.

14.3.2 Compliance with SWPPP Requirements

The federal stormwater program administered by the U.S. Environmental Protection Agency (EPA) requires that permittees prepare a SWPPP, but does not require that the SWPPP be submitted for review. Montana's MPDES Stormwater Program is more stringent than the federal program in this respect, as it requires that the SWPPP be submitted for departmental review. Compliance with this submittal requirement was very similar for industrial and mining facilities; 56% of the industrial and 54% of the mining facilities submitted SWPPPs.

It should be noted, however, that submittal does not equal compliance. The general permits specify what the SWPPPs must address and not all submitted SWPPPs meet the requirements. All the submitted SWPPPs have not been reviewed to date, but of those reviewed, approximately half are adequate as submitted. The SWPPPs reviewed range in quality from elaborate, professional documents to hand-written scribbles on a single page of paper. From this response we can conclude that in Montana, approximately 25% of the facilities authorized to discharge stormwater have prepared a SWPPP that demonstrates an understanding of the program goal and the means for the facility to attempt to meet that goal. The implication of this evaluation for programs not requiring SWPPP submittal is that 25% or less of the facilities would be expected to prepare an adequate SWPPP. By reviewing the SWPPPs, Montana can expect to increase the percent of its facilities achieving permit compliance as compared to programs not requiring submittal for review.

14.3.3 Success at Meeting the Permit Discharge Goal

The federal stormwater general discharge permitting program does not include effluent limits and therefore does not contain a means to measure success.

The state general discharge permits follow this lead. The lack of a quantifiable measure of success makes it difficult for the regulated public to develop adequate BMPs and difficult for the state to evaluate permittee success in meeting the permit goal.

A means for the program to evaluate success in meeting the general discharge permit goals was developed based on the following information. The general discharge permits' statements of basis specify that waste discharges will be minimized or eliminated through implementation of BMPs. Montana's non-degradation policy does not allow a waste discharge concentration in excess of that parameter's concentration in the receiving water. Observation of natural processes indicates that some erosion and sedimentation is expected under undisturbed, natural conditions as a response to rainfall and to snowmelt. These factors suggest that some increase in waste discharges may be acceptable during stormwater discharge events. According to the Montana 305(b) report (Water Quality Division, 1994), suspended solids and siltation are the waste parameters that are the leading causes of impairment to Montana's streams. Pollutants such as acidity and metals from mine sites, and petroleum hydrocarbons and other chemicals from industrial facilities often grab newspaper headlines, but their effects are generally localized whereas total suspended solids impair the greatest number of stream miles in Montana. Parameter analysis lists vary for different types of industrial and mining facilities, but total suspended solids (TSS) is a parameter common to all the lists. Based on this information, it is reasonable to consider the stormwater discharge TSS concentration as a measure of BMP effectiveness.

The problem of deciding what TSS concentration is acceptable in stormwater discharge remains. The purpose of the general permit is to control increases in waste discharge over the natural condition. Several assumptions can be made about discharge quality expected under natural conditions. It can be assumed that under natural conditions sediment discharge concentration would vary due to factors including: the sediment availability, erodibility of the materials exposed to stormwater, the volume, intensity, and duration of stormwater runoff, the amount of vegetative cover and the type of vegetation, the percentage of impervious surfaces, etc. After consulting with several agencies that regularly review water quality data from sites across Montana, a goal of 100 mg/L TSS was selected as a measure of program success. It should be noted that this value is not an enforceable standard, but rather a yardstick by which the program can measure its success in a system that is expected to vary considerably from site to site.

A query of the EPA's Permit Compliance System (PCS) database, which Montana uses to store its MPDES discharge permit monitoring report data, indicated that 111 records exist for industrial facilities and 53 records exist for mining facilities. Of the 111 records, analyses were conducted for 51 industrial facility samples and 13 mining facility samples (The number of records is greater than the number of facilities because facilities may have more than one outfall or

may have sampled more than one event). Figure 14.3 shows that the program goal of 100 mg/L or less TSS was met at 47% of the industrial facilities sampled and 78% of the mining facilities sampled. Additionally, it can be seen that 15.5% of the industrial facilities sampled had mixed results where some outfalls met the goal while others did not.

■ % Meeting goal ■ % Not meeting goal ■ % With mixed results

Figure 14.3 Percentage of facilities sampled meeting TSS goal.

Figure 14.4 is a histogram of the sample analyses results for industrial facilities. Note that the 0 to 500 mg/L class has been split at the 100 mg/L level to separate out the number of samples meeting the program TSS goal. It can be seen that nearly half of the samples met the program TSS goal of 100 mg/L. The histogram also shows that most of the samples that did not meet the 100 mg/L goal were less than 1000 mg/L. Only ten (19.6%) of the 51 industrial samples exceeded 1000 mg/L TSS.

Figure 14.5 is a histogram of the sample analyses results for mining facilities. The most apparent difference between this histogram and Figure 14.6, the histogram for industrial facilities, is the bimodality present in the mining histogram. It appears that the mining facilities either met the program goal or missed by a wide margin. Note that all samples below the 500 mg/L class were less than the 100 mg/L TSS goal.

The program goal may be attainable for facilities reporting less than 1000 mg/L with relatively little refinement of facility BMPs. Facilities reporting 1000 to 3000 mg/L TSS would be expected to have more difficulty in improving stormwater discharge quality. Evaluating the monitoring results in this manner allows the program to identify facilities having problems meeting permit objectives and to prioritize inspections to help facilities identify source areas and develop BMPs to control the discharge quality. Prioritizing inspections to optimize program effectiveness is extremely important in rural Montana because only two professional staff are available to inspect the 458 facilities, often separated by hundreds of miles, that are authorized to discharge stormwater.

Figure 14.4 Program success at meeting TSS discharge goal, industrial facilities.

Figure 14.5 Program success at meeting TSS discharge goal, mining facilities.

These results appear to indicate that mining facilities are achieving better success at meeting the program's goal. If these results are representative of actual conditions, the lower percentage of TSS discharges in excess of the program goal could be explained by the mining industry having a greater familiarity with sediment control BMPs because of its involvement with other permitting programs. The results may not be comparable, however, because of the small sample size ($n=13$) of the mining permits.

The representativeness of the self-monitoring analyses results can also be questioned. Sampling bias for a variety of reasons can cause drastic differences in results. For example, one mining facility reported a stormwater discharge sample analysis result of 14 mg/L TSS during an October 1994 storm event. The stormwater program analyzed a stormwater discharge sample at the same facility two weeks later at 19922 mg/L TSS. The upstream sample collected by program staff during this event contained 64 mg/L TSS indicating a TSS increase of three orders of magnitude on the mine site. When program staff asked the mine's environmental director to explain the vast discrepancy in results between the mine's sample and the program sample two weeks later, the explanation offered was that the mine collected its sample on a day when the mine operations were closed and the department sampled when the mine was operating. This is only one example of bias in sampling that can drastically affect results.

This evaluation of Montana's stormwater discharge monitoring results indicates that:

- facility success at minimizing or eliminating waste discharges in stormwater appears to vary by the general discharge permit type
- many industrial facilities in Montana may be able to improve stormwater discharge quality with relatively little additional effort
- mining facilities that have elevated TSS concentrations in stormwater discharges may require greater effort to improve stormwater discharge quality
- self-monitoring results must be evaluated carefully because sampling bias can have a drastic effect on results
- prioritization of facilities for inspection and assistance in selecting and implementing BMPs can be accomplished using very simple analysis methods

14.4 Precautions for Stormwater Modeling in Montana (and similar areas)

Those attempting to model stormwater in Montana or other mountainous areas are cautioned here about several variable factors and possible effects on modeling efforts. Farnes (1995) has made several observations about snow and

mountain hydrology that are very significant for modelers and these are summarized below.

Rainfall estimates are often based on National Oceanographic and Aeronautics Administration atlases or similar data compilations. These sources often show isohyetal lines that join data points to interpolate values for unsampled sites. The problem with using these values in a state like Montana is that the data points often represent values at an airport weather station, located in a valley, and extrapolated isohyetal lines near mountain ranges can be very misleading. For example, the temperature at the airport in Belgrade can be -20°F (-29°C) at the same time Bozeman, only nine miles away, records 0°F (-18°C) and the Bridger Bowl Ski area north of Bozeman is reporting $+20^{\circ}\text{F}$ (-7°C). This effect is due to temperature inversion. Because temperature values vary tremendously in the mountains and precipitation values vary similarly (precipitation is typically greater), the interpolated values are essentially worthless in the mountains.

Additionally, the values often record total *precipitation* measured, not rainfall. The measured precipitation is often snow and the reported values are not converted to snow water equivalent. Snow water equivalent is the amount of water contained in a volume of snow. According to the National Oceanic and Atmospheric Administration (NOAA), in Montana *more than 50 percent of normal annual precipitation occurs as snow and less than 15 percent of the observing stations used [to create NOAA Atlas 2] makes [sic] snowfall measurements*. Modelers are advised to obtain raw precipitation records and compare inches of precipitation to temperature. The modeler can then decide whether the precipitation represents rain or snow. If the modeler decides the record represents snow, an estimate of the snow water equivalent should be used for the model input, with the caveat that this snowfall precipitation may not run off during the storm, as discussed in more detail below.

A further concern is that snowpack precipitation does not typically run off during the storm as rain does. Not until the entire snowpack is isothermal above 32°F (0°C) will the snowmelt occur. This can occur during a rain-on-snow event. Modelers can imagine how different the runoff from the rain-on-snow event would be from that expected from the incident rainfall alone.

Yet another concern is whether the soil is frozen or unfrozen. If covered by less than about 2.5 ft (760 mm) of snow, the ground will be frozen allowing little infiltration and little entrainment of sediment. Conversely, if the snow cover is greater than 2.5 ft (760 mm), the soil will generally not be frozen allowing infiltration and sedimentation.

From this discussion of these points made by Farnes (1995), it can be seen that a rain-on-snow event with rain incident upon a thick, isothermal 32°F (0°C) snowpack with high snow water equivalent can create stormwater runoff and associated erosion and sedimentation far greater, and occurring at different times, than that simulated by the unwary modeler using airport precipitation data.

14.5 MPDES Stormwater Discharge Permit Fees

In 1993 the Montana legislature passed legislation to fund the MPDES permit program entirely by means of user fees. Rules associated with this legislation are used to assess sufficient fees to fund the program's legislature-approved budget. The permit fees include application and annual fees. This change in the program funding mechanism has created an additional administrative workload for the program staff, but also has had a somewhat unanticipated effect improving stormwater quality by reducing the number of point source stormwater discharges.

Facilities seeking discharge permit coverage must submit an application fee with the discharge permit application. An application fee is assessed for each discharge point. The fee amount varies according to the type of permit; it is \$400.00 for general permits and \$1,000.00 for individual permits. This fee is paid once during the permit life which is typically five years. The application fee covers the costs of processing, reviewing, and responding to the application.

If permit coverage is approved, the permittee must also pay an annual fee. The annual fee is also assessed for each discharge point. The annual fee also varies according to the type of permit; it is \$400.00 per discharge point for the industrial and mining general permits, \$250.00 for the construction general permit, and \$1,000 for individual permits. The annual fees are assessed for each year of permit coverage. The annual fee covers the costs to create document and data files, review and record discharge monitoring reports, review SWPPPs, conduct inspections, and all other activities associated with maintaining the permit program.

As mentioned above, the user fee system has had an unanticipated effect on stormwater quality. When facilities realized they would be assessed a fee to discharge based on the number of discharge points, many facilities took measures to reduce the number of discharge points or to eliminate stormwater discharges altogether. Montana has received 750 applications for general discharge permit coverage for stormwater and has issued discharge authorizations to 458 facilities. Many of the facilities that were not eligible for coverage had implemented BMPs to eliminate stormwater discharges. Typically facilities wanting to eliminate stormwater discharges will construct berms to direct stormwater to an area or pond that allows stormwater to infiltrate and evaporate. The desire to avoid paying fees to discharge stormwater appears to have helped to improve water quality in this manner.

This practice does not mean that facilities can pollute ground water to avoid stormwater discharges to surface water. It was mentioned above that ground water that is hydrologically connected to surface water is considered to be surface water. The program evaluates proposals to eliminate stormwater discharges by infiltrating the stormwater. If the ground water is hydrologically connected to

surface waters and the stormwater contains a waste that moves conservatively through the vadose zone and aquifer to surface water, stormwater discharge permit coverage is required. If the stormwater contains a waste that will enter the vadose zone and an aquifer, the application is referred to the ground water permitting program. If it is determined that the stormwater infiltration will only recharge the aquifer with suitable quality water, no permit is required.

14.6 Conclusions from Montana's Experience with Stormwater Permitting

Montana's fee system has an unanticipated effect on reducing stormwater discharges, and additionally has generated adequate revenues to fund the present program.

Modelers working in Montana or similar states will have to use caution when assigning input parameters to their models because of many factors that affect stormwater discharge volume and timing in rural, mountainous areas.

Montana has achieved a notable measure of success in the implementation of its stormwater program. By assuming primacy for the program, Montana has been able to

1. require compliance measures, such as SWPPP submittal, that provide a means to identify facilities that understand the concept of stormwater pollution and those that need assistance in addressing stormwater discharge problems, and
2. conduct its program with local staff who have a better understanding of the variability in physiographic provinces and weather that can affect stormwater discharges than might be possible if the program were administered from a remote location.

Montana's evaluation of its initial program success in achieving protection of water quality indicates that between 50% and 75% of the facilities authorized to discharge stormwater are meeting program goals and that approximately 80% of the facilities have a good potential for meeting the discharge goals under the general discharge permits.

Montana's experience in stormwater discharge permitting has been that waste discharges that can impair water quality do exist in this rural western state and that facilities can implement practices to improve stormwater discharge quality to levels that are protective of the quality of Montana's state waters.

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