

Devils Lake Outlet Permit Modification
Permit No. ND-0026247
Response to Comments

The Devils Lake outlet permit modification request was to: (1) remove the time frame the outlet could operate, (2) remove or revise the total suspended solids (TSS) limit in the permit and (3) increase the 300-milligram per liter (mg/L) instream sulfate limit at the Bremen site. Both written and oral comments were submitted into the hearing record for North Dakota Department of Health review. Public comments both supporting and opposing the Devils Lake outlet permit modification were presented. All comments in the record were evaluated by department personnel for applicability to the proposed permit modification, and a written response was provided. According to state and federal rules regarding the National Pollutant Discharge Elimination Program, only the conditions subject to modification are reopened in the permit when it is modified. Therefore, the department will not respond to comments unrelated to those issues.

Comment: The North Dakota Department of Health is not functioning as an independent finder of fact in reviewing the North Dakota State Water Commission's request for modification of North Dakota Pollutant Discharge Elimination System Permit (NDPDES) ND-0026247.

Response: The North Dakota Department of Health is an independent agency charged with the responsibility of protecting water quality in North Dakota. The Division of Water Quality initiates a review of any proposed permit or modification and makes a determination whether the State Water Quality Standards will be violated or beneficial uses will not be maintained. The department applies the latest criteria from the U.S. Environmental Protection Agency (EPA) to predict adverse effects on aquatic life, human health, recreation and agricultural uses. The Department of Health has been given primacy by EPA to evaluate these matters. As part of its oversight responsibility, EPA routinely reviews the program to ensure compliance with the law and rule. EPA is aware of the Devils Lake issue and the review/action taken by the department.

Comment: The North Dakota Department of Health does not have the authority to modify NDPDES Permit ND-0026247 for the Devils Lake outlet to increase the permitted discharge unless new information is available.

Response: The North Dakota Department of Health may modify an NDPDES permit for a number of reasons including, but not limited to, the receipt of new information. The modification request included detailed information on the factors influencing sulfate and mineral chemistry in the Sheyenne River near the point of discharge which was not available when the permit was first considered. In addition, the specific conductance measurements at the Flora and Bremen gages were established during 2005. Prior to 2005, there were limited data available at the point of insertion. In the process of developing a relationship between specific conductance and sulfate concentration, it was recognized that the natural background levels for sulfate at the point of insertion were higher and more variable than known previously. This information, along with

available new information, would justify the consideration of different permit conditions. The Department of Health has the authority to modify a discharge permit if water quality standards will be met and beneficial uses of the water downstream are maintained.

Comment: Water quality of the Sheyenne River at Valley City for municipal use will be impaired.

Response: The proposed permit amendment allows for a 15 percent increase in sulfate concentration above the base condition not to exceed 450 mg/L. Prior to Devils Lake outlet water reaching Valley City, substantial dilution will occur. Based on watershed size and hydrology above Valley City, the change in sulfate concentration at Valley City will be nominal.

Comment: Species composition of aquatic macrophyte communities is significantly influenced by sulfate concentrations in water.

Response: While aquatic macrophyte communities can be influenced by sulfate concentrations in water, the 15 percent increase in sulfate concentration in the Sheyenne River allowed by the permit modification would attenuate rapidly downstream from the point of insertion. The attenuation would include significant dilution within Lake Ashtabula in North Dakota. The water quality standard of 450 mg/L in the Sheyenne River and 250 mg/L in the Red River of the North will not be exceeded as a result of the proposed permit modification.

Threshold concentrations for changes in species composition of aquatic macrophytes are not established. The natural background concentration near the point of discharge into the Sheyenne River periodically exceeds the numeric criterion for sulfate. As of July 18, 2006, the sulfate concentrations at Flora and Bremen were 580 mg/L and 576 mg/L, respectively. This is substantially above the maximum concentration proposed in the permit modification.

Comment: Increasing the volume of water released increases the likelihood that biota will be transferred.

Response: The department's initial decision on risk of biota transfer is res judicata; i.e., issues pertaining to biota that have been, or could have been litigated, cannot be re-litigated.

Comment: A water quality model should be used to predict sulfate concentrations downstream under low-flow conditions.

Response: The Department of Health did not require new water quality modeling for the proposed permit modification. While water quality modeling is a useful tool for understanding and managing a river system, the department will primarily rely on water quality data collected from the nine monitoring sites listed in the permit. The actual monitoring data will be used in developing empirical relationships to evaluate the effect of the discharge under various conditions as well as adjust the outlet operation in accordance with the Adaptive Management Plan.

Comment: This request to modify the original permit should be denied because it would allow a 50 percent increase in sulfates in the Sheyenne River from 300 mg/L to 450 mg/L, far above the 15 percent allowed in the antidegradation policy.

Response: The permit modification allows for a 15 percent increase above base conditions of sulfate in the Sheyenne River, not to exceed 450 mg/L. For example, if the sulfate concentration in the Sheyenne River above the outlet were 300 mg/L, the maximum increase would only be 45 mg/L to 345 mg/L. The natural background concentration near the point of discharge into the Sheyenne River periodically exceeds the numeric criterion for sulfate.

Comment: The department has failed to undertake a detailed antidegradation review for the requested permit modification. Annual pollutant loadings of sulfates to the Sheyenne River will increase by more than 15 percent as a result of the combined effect of two of the State Water Commission's requested permit modifications. Allowing an increase in sulfate concentration substantially beyond background by 15 percent up to a maximum of 450 mg/L and allowing the discharge period to be extended prior to May 1 and after November 30 of each year will increase the annual pollutant load of sulfates beyond 15 percent. Thus, under the express terms of the department's policy, a determination should have been made that "significant effects" would arise because the proposed modification would "increase permitted pollutant loadings to a water body by more than 15 percent." Consequently, under the department's own policy, an additional antidegradation review is required to be performed, and in the absence of such review, the permit modification request cannot lawfully be approved.

Response: The department's antidegradation procedures for Category 1 waters require that regulated activities resulting in a new or expanded source of pollutants to this category of waters are subject to the review process, unless the source would have no permanent effect on the quality and beneficial uses of those waters or if the effects will be appropriately minimized and temporary. Because beneficial use is not affected, the antidegradation review is not required.

The Devils Lake outlet permit is temporary. Operating criteria specifically state that no discharge will be allowed when Devils Lake reaches an elevation of 1,445 feet mean sea level (msl). With this established as an end point for allowed discharge, it is not unreasonable to conclude that at some point in the future no discharge will occur. This is consistent with the word "temporary." The department's draft permit modification considered that the effects will be appropriately minimized by allowing a moving concentration above the natural base condition and is consistent with the language "appropriately minimized."

The department review also concluded that the discharge would have no significant permanent effect on the quality and beneficial uses of the water because the permit does not allow discharge under ice conditions. The outlet will not operate for approximately four or more months per year. The word "permanent" applies to municipal and industrial point sources that will be present for the foreseeable future.

The 15 percent increase test that applies to antidegradation review is as follows: The proposed activities that would lower the ambient quality of a water body of any parameter by more than 15 percent, reduce the available assimilative capacity by more than 15 percent or increase permitted pollutant loading to a water body by more than 15 percent will be deemed to have significant effects.

Because it is targeted at natural background concentrations, the ambient quality will not exceed 15 percent. The assimilative capacity applies to nonconservative constituents. Sulfate is a conservative constituent or is assimilated at a very low rate and not considered for these purposes. The additional sulfate at these levels does not affect the assimilative capacity of the stream.

The application of mass loading criteria to this stream is inappropriate. Mass loading criteria are applied to water bodies such as lakes or reservoirs that have a hydraulic residence time. The sulfate standard is intended to protect drinking water uses. Drinking water supply systems respond to concentration considerations, not mass loading. As such, it is appropriate to evaluate sulfate additions to water bodies with an established drinking water use in terms of concentration. The department issues to municipalities and industries discharge permits which are based on concentration of constituents in the discharge and the stream.

Comment: Probably the greatest concern is chloride levels. It is not known exactly what chloride concentration is lethal to mussels, but locations where levels are 87 parts per million (ppm) or more have no clams. Potassium ions are also toxic and, in combination with chloride, may combine to create habitats unsuitable for mussels. Chloride levels in West Bay are over 100 ppm.

Response: The water quality standard for chloride in Class IA streams is 175 mg/L. The EPA-recommended criteria are 230 mg/L for chronic exposure and 860 mg/L for acute exposure.

Chloride concentrations in the Sheyenne River near Warwick averaged 17 mg/L, with a range of 10.1 to 21.1 mg/L for 2005. The Devils Lake Outlet discharge would result in chloride concentrations in the Sheyenne River of less than 87 mg/L. Natural resource agencies did not express concerns about chloride concentrations at these levels.

Potassium is a common ion found in surface waters throughout North Dakota. There is no numeric water quality standard for potassium, nor does the EPA require or recommend a threshold concentration for impacts on aquatic life.

Comment: The department should not remove the TSS effluent limit from the permit.

Response: There presently are no TSS stream standards for any classes of waters in North Dakota. In addition, there are no effluent guidelines or permitting requirements for water-to-water transfers. Even specific sources regulated under the NDPDES Program (e.g., stormwater discharges) are required to implement best management practices (BMPs) in lieu of numeric effluent limits to prevent sediment impacts.

The control of TSS in the outlet discharge is primarily achieved through proper design, operation and maintenance. The outlet does not include features which can be, reasonably controlled to respond to sudden changes in TSS concentration caused by such events as natural variability or storm inflows. As such, BMP requirements are more appropriate than numeric limits for controlling TSS in this discharge.

The department intends to replace the 100 mg/L TSS limit with BMP requirements for the control of TSS as part of the permit modification. As part of the operation and maintenance of the system, the permittee will be required to (1) implement BMPs to control TSS and (2) continue sampling for TSS at the outlet structure. The department has chosen to use the former limit as a notification level to initiate a review of the system and BMPs.

Comment: There were several comments in favor of the proposed permit modification. They included reducing the risk of a natural overflow, reducing flood damages around Devils Lake/Sheyenne River and protecting water quality and maintaining beneficial uses of the water.

Response: Comments Noted.

REFERENCES

NDAC 33-16-01. *North Dakota Pollutant Discharge Elimination System Program* (December 1, 2004)

NDAC 33-16-02.1. *Standards of Quality for Waters of the State* (June 1, 2001)

North Dakota State Water Commission. *Sources and Processes Affecting Dissolved Sulfate Concentrations in the Upper Sheyenne River* (March 22, 2006)