



IN REPLY REFER TO:

United States Department of the Interior

BUREAU OF RECLAMATION
Flaming Gorge Field Division
5995 Flaming Gorge Visitor Center
Dutch John, UT 84023



UC-600
2.1.4.13

July 31, 2023

Ms. Danielle Lenz
Environmental Scientist, Utah Department of Environmental Quality

Subject: Technology-based Phosphorus Effluent Limits Variance Request – Utah Pollution Discharge Elimination System Permit No. UT0020338, Flaming Gorge Dam, Utah

Dear Ms. Lenz:

The Bureau of Reclamation, Flaming Gorge Field Division (Reclamation), renewed our Utah Pollution Discharge Elimination System Permit No. UT0020338 December 1, 2022. As part of the permit renewal process, Reclamation failed to request a variance from compliance with the Technology-based Phosphorus Effluent Limits (TBPEL) Rules (UAC R317-1-3.3). We are now submitting this request for a variance.

Subsection C of the TBPEL rules allows for owners of a treatment works to request a variance from the Utah Department of Environmental Quality if they meet certain conditions. One of these conditions is demonstration by the owner of the discharging treatment works that the TBPEL or phosphorus loading cap are clearly unnecessary to protect waters downstream from the point of discharge. Reclamation believes that the Flaming Gorge Dam Wastewater Treatment Plant (WWTP) effluent discharge meets this condition.

The WWTP is located at the Flaming Gorge Dam site in Daggett County, UT. The facility serves the Flaming Gorge Dam Visitors Center and Reclamation personnel employed at the Dam. The WWTP discharges treated effluent in the Green River at the base of the dam. The WWTP uses an extended air activated sludge process to treat the domestic sewage before it is discharged into the Green River at the outfall.

Discharge flows from the WWTP vary from extremely low flows of approximately 100-150 gallons per day during the winter months to high flows of approximately 1,700-2,150 gallons per day during the summer months. Flows in the Green River near the outfall vary from a minimum of 685 cubic feet per second (cfs) to a maximum of 8,600 cfs. With a low flow of 685 cubic feet per second (cfs) for the Green River below the dam, and a discharge flow of 0.01 cfs from the WWTP, the Flaming Gorge WWTP effluent makes up less than 0.0015% of the river at the effluent outfall.

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The phosphorus levels in the treated effluent range between 1.8 and 18 mg/L (daily phosphorus load range of 0.003 to 0.06 kg/day). Phosphorus levels in the receiving water typically average 0.009 mg/L which is well below the impairment threshold (average phosphorus load is approximately 90 kg/day). A phosphorus load calculation for the receiving water indicates that the phosphorus in the WWTP effluent makes up only about 0.06% of the total phosphorus in the receiving water. In a worst-case scenario of high flow and concentration from the WWTP (2,150 gpd recent peak, 18 mg/L) combined with low river flow and P concentration (685 cfs 5-year minimum, 0.005 mg/L P) the effluent would make up about 1.7% of the total phosphorus in the receiving water, adding an additional 0.15 kg/day to the river phosphorus load. If new equipment were installed at the treatment plant to reduce the phosphorus levels in the WWTP effluent to below the TBPEL rule, and assuming the worst-case scenario for minimum river flow and low P concentration, this would only result in an estimated phosphorus reduction of 0.00008 mg/L in the receiving water.

In discussion with Utah Division of Wildlife (DWR) Flaming Gorge Project Leader and fisheries biologist Ryan Mosley, the only downstream use that was identified was recreation, more specifically fishing. The Green River is designated as a cold-water (3A) fishery and the Green River below Flaming Gorge is known as a world-class trout fishery. When asked whether there are any concerns with phosphorus levels affecting the Green River fishery, Ryan responded that they have not seen anything with respect to the fishery that would indicate that phosphorus loading on the Green River below the WWTP is a concern. He further stated that DWR has not been inclined to perform any studies on impacts to recreation due to nutrient loading on the Green River because there are no indicators that the fishery is being harmed by high phosphorus levels.

In order to reduce the phosphorus in the WWTP effluent the WWTP would need to be completely rebuilt. The WWTP's current configuration would not allow for the addition of the equipment (primary clarifier, secondary clarifier, chemical feed system) necessary to reduce the phosphorus levels to below the TBPEL and a new WWTP would need to be constructed. Even if new equipment were installed at the WWTP to reduce phosphorus levels in the WWTP effluent it would only reduce the phosphorus contributed by WWTP to the total in the receiving water by 0.000084 mg/L.

For these reasons provided, it is reasonable to assume that there is very little potential for the phosphorus in the WWTP effluent discharge to degrade or impair downstream uses. Therefore, Reclamation believes that a TBPEL or phosphorus loading cap would be unnecessary to protect waters downstream of the WWTP and that a variance would be appropriate.

If you have any questions about this request, please feel free to contact Mr. Steve Raney at 435-885-3106 or by email at sraney@usbr.gov.

Sincerely,

Nicholas T. Williams
Upper Colorado Regional Power Manager