

Summary of Hailstone NWR Dam Removal Meeting with MTDEQ

On February 12, 2009, the Service, the Montana Department of Environmental Quality (MTDEQ), Montana Bureau of Mines and Geology (MBMG), and URS Inc. met to outline what the Service would need to accomplish prior to removing the dam at Hailstone NWR.

During the previous meeting, in July of 2008, MTDEQ requested that all of the salt behind the dam be removed, and in addition, they wanted information to show that dam removal would create an environmental benefit.

At our meeting last week, the Environmental Contaminants Program (EC) briefed MTDEQ on the salinity and selenium loads currently being delivered to Hailstone Reservoir from crop-fallow induced saline seeps. These loads come from both groundwater and surface water. Without changes to agricultural practices upstream these loads will continue to degrade surface water and groundwater quality. Even if we treat all the water currently held behind the dam, more salt will be delivered to the reservoir with each rain event, and with groundwater seepage into the reservoir.

Because of the nearly constant addition of salts to the reservoir, MTDEQ asked the service to address one more data gap. The State wants the Service to model how much salt is actually delivered to the reservoir via surface water runoff and groundwater recharge over the period of a year. We will then compare this "load" with the amount of salt we could actually remove using techniques described in the Feasibility Study completed by URS Group Inc. If current technologies cannot remove more salt than is delivered in a year, then we will likely not try to remove salt from behind the dam. Once we have the data to make this comparison, we will meet with MTDEQ again and discuss our next steps.

The current data gap (how much salt is delivered to Hailstone Reservoir in one year) will be addressed by MBMG completing slug tests on monitoring wells installed on the northern portion of the reservoir. This will be used in modeling groundwater inputs to Hailstone Reservoir. Since we know the salinity of the groundwater, we will be able to determine salt loading from groundwater. URS Group Inc. has already modeled surface water inputs into the reservoir that we can use to model yearly surface water and salt additions to the reservoir. We hope to have the slug tests completed in the next few weeks so we can complete all the necessary calculations requested by the State.

On the issue of net environmental benefit, MTDEQ did agree that not impounding water at Hailstone would reduce risks to both waterfowl and shorebirds using the basin. Water will be naturally impounded in some areas within the closed Lake Basin during rain and snowmelt events (we cannot change the existing topography). Returning Hailstone to its natural configuration (no reservoir) will result a change from a relatively small watershed (31,219 acres) to 170,414 acres (the watershed of Hailstone plus the watershed of

Halfbreed). This increase in watershed size should result in significant dilutions of the degraded water quality currently arriving at Hailstone Reservoir.

Spill Test

Another result of the meeting was to determine what volume of water would actually infiltrate into the channel of Hailstone Creek. Hydrogeologists from MBMG currently estimate $\frac{1}{2}$ to $\frac{2}{3}$ of water released from Hailstone will infiltrate into the soil profile or evaporate prior to reaching Halfbreed Lake on Halfbreed NWR. Hailstone Creek flows for 8.7 miles from the base of the dam at Hailstone Reservoir to the inflow at Halfbreed Lake. This channel has been dry for most of the last 8 years. The Service will work with downstream landowners so they are informed of the test. Water will be moved over the spillway using a siphon fitted with a flow meter.

Long-Term Water Quality Improvements

The only real solution to addressing water quality concerns within Lake Basin is to address the source of the saline seeps. Continuous cover needs to be established in saline seep recharge areas throughout the basin. This would mean changes in agricultural practices from crop-fallow rotation to another alternative. In order to encourage these activities, MTDEQ may begin to address the concern through their Total Maximum Daily Loads (TMDL) program. DEQ is required to develop TMDLs for all water bodies on the 303(d) list. The 303(d) list is a compilation of waterbodies throughout the state that do not meet water quality standards and this includes Hailstone, Halfbreed, and Big Lake. A TMDL is the total amount of a pollutant that a waterbody may receive from all sources without exceeding water quality standards. A TMDL can also be defined as a reduction in pollutant loading that results in meeting water quality standards. Montana's approach is to include TMDL as one component of a comprehensive water quality restoration plan.

Next Steps

We will meet with the State as soon as all calculations are complete to compare annual salt loading to Hailstone Reservoir to the amount of salt we would be able to remove in a year. It will be necessary to wait until we know what the State's requirements for dam removal will be before we proceed with planning our next steps.

Amalgamate - to combine in an amalgam. To join together into one; unite; combine.

Amalgamation - mixture, blend.