

## **Teton Basin Aquifer Recharge FAQ's**

### **Recharge Program Background Information:**

- Agriculture in Teton Valley and areas further downstream depend on snowpack to serve as a natural water storage system.
- A changing climate is causing snow to melt earlier, making it harder and more expensive for farmers to obtain water for their crops in late summer. The earlier run-off is also having negative impacts on river health during the hottest times when plants, fish, and wildlife need it most.
- Agricultural interests hold and manage the vast majority of water rights in Teton Valley. Farmers have the means and legal right to manage water in ways that can lead to more late season water availability.
- By incentivizing Teton Valley's farmers to flood irrigate their fields when water is abundant (April-June), the aquifer can be turned into a natural and cost-effective water storage mechanism (July-September).
- Recharged water is then slowly released from the aquifer into the Teton River, benefitting the ecosystem and the fishery, as well as farmers.
- More abundant late season water provides economic benefits to the entire valley, from family farms to fishermen.

### **What is Recharge?**

Aquifer recharge or "recharge" occurs when surface water is absorbed into the ground and becomes groundwater. In Teton Valley there is a great deal of interaction between surface and groundwater, water is recharged into the aquifer via precipitation, sprinkler irrigation, and water seepage in streams, ditches, and irrigation canals. Water that enters the aquifer moves through the ground more slowly than the surface water running downstream, and is delayed in its return to the Teton River.

### **Why is FTR interested in Recharge?**

By strategically recharging groundwater resources—intentionally recharging water to the sub-surface in specific headwater locations when water is plentiful—we are able to keep water "stored" just a little longer in the natural reservoir under our feet; replenishing groundwater supplies for household wells, and delaying water contributions to streams and wetlands, so that the river has a cool and consistent release of water from the aquifer in late summer when fish and wildlife need it most.

### **How can Recharge help our community?**

On average, less water is available from snowmelt and leaving Teton Valley earlier in the year, which has also left farmers with less water for irrigating crops, less water in wells and city drinking water supplies, and less water with higher temperatures in the Teton River to support fish and wildlife. By working with willing water rights holders and irrigators to actively recharge snowmelt into the aquifer, we can increase a more stable groundwater supply for all.

### **Who are we working with?**

A pilot recharge effort is being led and managed by the Teton Water Users Association—a group including FTR, agricultural producers, conservation groups, municipal and county leaders, and experts in hydrology and economics of the rural West; including the Teton Soil Conservation District, Farm Bureau, individual water rights holders, canal companies, FTR, the Henry’s Fork Foundation, and others—whose goal is to increase water levels in the aquifer and the Teton River. This will insulate farmers (and fish) against changes in water availability, while increasing water supply reliability, especially in times of drought.

### **Did you know?**

Irrigation canals and irrigated fields contribute significantly to recharging the aquifer. Of the water diverted into canals, 40 percent seeps into the ground as recharge, and only 25 percent of the water applied to fields is used by crops. So, about half of the water used for agriculture annually in Teton Valley (45,000 acre-feet) ends up back in the Teton River.

### **What is an acre-foot?**

Water managers and farmers talk about water in acre-feet. One acre-foot is the amount of water it would take to cover one acre (about the size of a football field) with water one foot deep. One acre-foot is 326,000 gallons. The average size Olympic swimming pool takes 2 acre-feet of water to fill.

### **What is our plan?**

FTR is working with irrigators to strategically use spring flows (April-June) to recharge the aquifer through strategic flood irrigation by running water through canals in the early season, while conserving water later in the season (July-September) when stream flows decline. FTR has secured grant funding to test recharge strategies—irrigators and irrigation companies receive financial incentives to increase recharge in the spring using existing water rights. FTR is closely monitoring the recharge response by measuring groundwater inputs and stream flows in the Teton River.

### **What success are we having?**

In 2018, we launched a pilot program with four canals. That first year proved the feasibility of employing this approach, but was too small in scale to generate significant in stream flow results. Building on that pilot project, in 2019 the program included fifteen canals participating from six different canal systems in the second year. In 2019, program participants recharged an additional 10,000 acre-feet to the aquifer. The program goal is to recharge 30,000 acre-feet to groundwater for a slow release to the Teton River.

### **How do we know recharge is working?**

- Monitoring wells allow us to measure the direct aquifer response to recharge. Program manager Bryce Contor has worked with the Idaho Department of Environmental Quality to collect historic well data and to re-start monitoring of additional wells.
- Friends of the Teton River and the Henry’s Fork Foundation are working together to measure the direct flows in the Teton River over the course of the year. We compare observed flows with

modeled flows in order to see how the recharge program is impacting timing and volume of water in the river.

- Dr. Rob Van Kirk (Henry's Fork Foundation) has developed a sophisticated water model for the Teton Basin, based on nearly one hundred years of measured snowpack, temperature, and streamflow data. This serves as our control for the program and lets us know what stream flows would be under normal irrigation practices.

### **How is this program funded?**

The Aquifer Recharge Program has been funded through federal and non-federal grant programs and foundations including the Bureau of Reclamation, the Natural Resources Conservation Service, the Idaho Department of Environmental Quality, the Nature Conservancy, and the National Fish and Wildlife Foundation. Friends of the Teton River and the Henry's Fork Foundation jointly fund a shared staff position to run the program. Grant funding pays for program coordination, infrastructure improvements, and monitoring support for participating irrigators.

### **What is the future of the program?**

Based on the success of the program in 2019, the irrigator community has shown significant interest in expanding the program in the years to come, here in the Teton Basin and there is support within the greater Henry's Fork Basin and region wide. As Recharge becomes another tool for managing water in watersheds like the Teton Basin the benefits for farmers and ranchers, soil health and water quality, fish and wildlife, will be realized at a greater scale. Continued financial support of this program will be essential for establishing positive outcomes for sustaining the landscape, the aquifer, and livelihoods for the long-term.

***Adapted from "Picturing Recharge in Teton Valley" (Friends of the Teton River Newsletter Water Lines Newsletter Winter 2018-19 Issue) and "Recharging Ahead" (Friends of the Teton River Water Lines Newsletter Summer 2019 Issue)***