



Actions Taken to Mitigate Flooding Can Work to Help Flood Irrigation

County works to update flood maps to more accurately reflect where flooding may occur.

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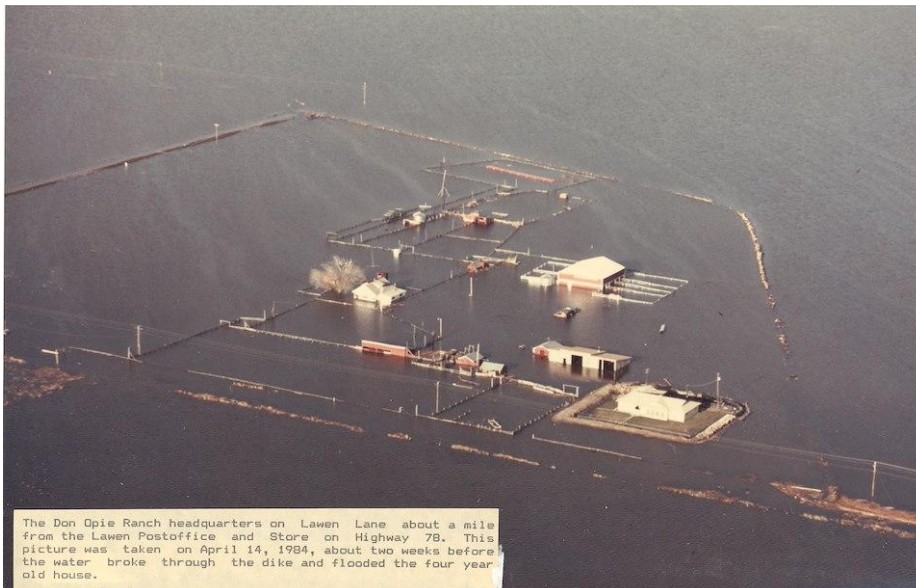
by Lauren Brown

Water is the basis for life. Whether there is too much of it, or not enough, it affects everyone. Farmers and ranchers need spring runoff for agricultural purposes. Some urban residents must buy flood insurance to protect their property during high water events. Migratory birds rely on flood irrigated fields to fuel up on their journey north.

In the Harney Basin, rarely is there a perfect balance of just the right amount of water. Infrequently, in high water years when the Silvies River overruns its banks, there is flooding to deal with. More frequently, folks must share the spring runoff and often there simply isn't enough to go around. "Without sounding too over the top, it's the lifeblood of this community, and you have to treat it with that respect," said Harney County Planner Director Brandon McMullen.

The Harney Basin Wetlands Collaborative, a collaborative supported by the High Desert Partnership, is examining ways in which flood mitigation efforts and flood irrigation can effectively benefit each other. Ken Bierly, a consultant for the wetlands collaborative, acknowledged that managing the water that comes from the Silvies River is a complex problem, but not an unsolvable one. "The need to protect from infrequent high water events should be done in a manner that does not adversely affect the more common conditions of low water management for hay meadow irrigation that is timely for waterbird migration," he said. "The recognition that the unpredictable water conditions in the Harney Basin makes cooperation among many interests critical for positive outcomes."

In some ways, flood mitigation and flood irrigation can work to complement each other. As the county works with the Federal Emergency Management Agency (FEMA) to create new flood maps and work on flood mitigation projects, there is the possibility that hundreds of structures could be removed from the 100-year floodplain, lifting the expensive burden of having to obtain flood insurance for those property owners. As the county looks at different alternatives to divert water from flooding the city of Burns, that water can be redirected to the east to benefit flood irrigated pastures. "The distribution and duration of the flooding will affect both the pasture quality and the waterbird spring habitat in the areas flooded," said Bierly.



Recent history of flooding in the Harney Basin

In the spring, water comes from the Silvies River, which flows for about 119 miles through Grant and Harney counties and terminates in Malheur Lake, 25 miles southeast of Burns. There is also drainage from the elevations above the towns of Burns and Hines. "When you combine those two in a cumulative event you get quite a mess," McMullen said.

Pictured: The Don Opie Ranch headquarters on Lawen Lane April 14, 1984. Photo by Pauline Braymen.

The Don Opie Ranch headquarters on Lawen Lane about a mile from the Lawen Postoffice and Store on Highway 78. This picture was taken on April 14, 1984, about two weeks before the water broke through the dike and flooded the four year old house.

He has been working on the flood re-mapping project since he started working for the county in 2006. While doing research for this project, he said back in the 1950s and 1960s, there wasn't much infrastructure in place to prevent flooding in the urban areas of the county. In the 1960s, the cities and county coordinated a planning effort to install ditches and culverts in areas throughout Burns and Hines to divert the flooding that would occur each year.

In 1983-84, there was a major flood event, the largest documented flooding event according to McMullen's research. "You had feet of flooding north of the lake south of town, but you also had flooding in and around town too," McMullen said. In April 1984, FEMA helped the county create a flood inundation map. It was a blanket-type map application that was approximate in nature, McMullen said. It provided a potential benefit for people who lived out of town and in unincorporated areas because it provided an opportunity to obtain less expensive flood insurance. "It was on the heels of these cumulative events, and so there was quite an awareness," McMullen said.

However, as time passed, the insurance landscape changed and a lot more data was collected. There were areas included in the blanket flood map that were clearly not inundated with water and never came close to a 100-year event flood. "We had a very large push locally from the county and both the cities to have a much more accurate FEMA flood map," McMullen said. The main fiscal benefit of new flood maps is that hundreds of structures could be moved out of the 100-year floodplain, which would remove the potentially expensive flood insurance requirement for property owners.

The project has two phases. The first phase involves the unincorporated areas outside of town to the east and phase two involves the drainages above town and the county's urban areas. Phase one has been completed and phase two is nearly so. The county's goal has been to get the most accurate information possible as to where flooding occurs. Once that is established, they can examine flood mitigation projects and how to move water that gets caught up on the west side of the area south of the Silvies River and move it further east to benefit flood irrigated pastures and agriculture producers.

Altered hydrology

Often, water is scarce in the Harney Basin and that makes the spring runoff a crucial time for agriculture producers and migratory birds.



Chris Colson is a regional biologist with Ducks Unlimited and a member of the Harney Basin Wetlands Cooperative. He noted that wetlands provide the function of flood storage. When rivers go over banks, the floodplain has a tremendous capacity to take on water. "Floodplains serve as the most valuable agricultural ground in many cases. The soil is so productive," he said. Flood irrigated meadows of perennial grass provide this function. They also provide much-needed habitat for migratory birds in the spring.

Pictured: Harney Basin flooded wet meadow spring 2022 taken by Brandon McMullen.

In many agricultural landscapes, people are moving away from flood irrigation and installing pivots to raise crops that are flood intolerant such as alfalfa or barley. In the Harney Basin, some have even put levees around their fields to prevent flood irrigation and natural flooding. This decreases the floodplain's capacity to take on water. "Even when you're not getting traditional development, changes in land-use or changes in agricultural commodities can still impact the capacity of a floodplain to take on flood volume," Colson said.

One major change came during the 1983-84 flood. According to Colson, many irrigators felt the character of the water flow from the Silvies River, which used to fork into two channels at Foley Slough, changed and stopped conveying as much water. At this point, more water is flowing west down the Silvies River and less is going to Foley Slough, which is having an impact on the city of Burns.

Over time, changes in infrastructure associated with transportation and roads have also adversely impacted where water flows and the ability of the floodplain to absorb water. Colson said one of the issues occurred when the Highway 20-Highway 395 interchange was installed. It redirected water west where it had historically gone east.

Over the years, there have also been instances where bridges were replaced with undersized culverts and driveways were installed without culverts. Many of these are minor things, but when they are added all together, it impacts the flow of water. "It's looking at some of these things that were done over time and collectively have added up to increasing flood pressure and intensity in one location and reducing the availability of water in another location," Colson said. "It altered the hydrology in terms of lateral distribution of surface water, and concentrated it back toward the city of Burns and away from the Harney Valley." As a result, Colson said it creates a circumstance where agriculture producers who are used to getting regular water aren't getting it and the city of Burns is increasingly having to manage flooding.

Solutions on the horizon

The county is working with Kleinschmidt, an engineering firm out of Portland, to find flood mitigation solutions. "The county now has a document that identifies several alternatives and then analyzes how that would affect the FEMA flood map and subsequently flood insurance requirements," Bierly said. "The county is at a point where they need to look at the feasibility of these alternatives, what the effects of those alternatives are and what the costs of them would be."

County planning director McMullen said the county has the Kleinschmidt report of flood mitigation alternatives but is waiting for the final flood modeling report from FEMA so that they have the best information available with which to consider all the options.

Bierly said the county will have to take a lot of things into consideration as it examines the flood mitigation options. Balancing the measures taken during infrequent high-water years, with measures taken during low-water years so as not to damage irrigation infrastructure or create problems for ranchers and bird habitat while maintaining protection for residential areas in Burns and Hines will be a lot to juggle.

Bierly also noted that the recent groundwater study has identified that nearly a third of the shallow aquifers supplied by the spring runoff are either naturally or flood irrigated and absorbed into the shallow aquifer. He said making sure that water is effectively used for aquifer recharge, for meadow hay production and timed in a way that the migratory water birds can use it is part of the balance that is unique to the Harney Basin.

McMullen agrees that finding the right balance is crucial. The county wants to protect folks in town from floods while also making sure those in agriculture can make use of water for flood irrigation. "It's the balancing of the great equation when it comes to the little amount of water that we get to play with," he said. "It can cause some damage and can really do some harm to folks in urban areas but really is such an important factor of agriculture out here," McMullen said.

This article is provided by High Desert Partnership; a Harney County nonprofit convening and supporting six collaboratives including the Harney Basin Wetlands Collaborative.

