To Whom it may Concern,

Pioneer Farms received a letter from Idaho Department of Water Resources with regards to the proposal to include the Lost River Valley in the expansion of the Eastern Snake Plain Aquifer of Common Ground Water Supply (ESPA AGCWS) and requested the input of water users in the valley on whether this proposal is appropriate. Pioneer Farms opposes the expansion of the ESPA AGCWS to include the Lost River Aquifer as a tributary and refutes that there is a connection between the two aquifers. Even if there is a connection, the distance between the two aquifers is so great that the impact between one and the other is irrelevant, and it is impossible to measure any meaningful impact of one to the other. Further, we argue that any proposal to put economic strain on our valley in correlation to strains in the Snake River Plain would not be equitable since our droughts and weather patterns do not necessarily correlate with that of the snake river. Whereas the snake River has many sources of water to substitute droughts in different valleys, we only have one source of water. To be included in the ESPA AGCWS would be a disaster for the Lost River Valley economy.

On the proposal that the Lost River Valley should be included in the Eastern Snake Plain Aquifer of Common Ground Water Supply, ESPA AGCWS, we must first decide what the water relationships are between the Snake River and the Lost River. Secondly, we should determine what the relationship is between the Snake River aquifer and the Lost River Aquifer. Thirdly, we must discuss if we can appropriately measure and regulate the Lost River as a tributary to affect any measurable water change in the Snake River aquifer.

The Snake River and the Lost River have no surface water connection. The Lost River is intermittent, spending half the year in Mackay Reservoir and the other half flowing toward Mud Lake but drying up about 50 miles from Mud Lake. The Snake River and the Lost River are separated by mountain ranges and geological barriers, with no correlation between their surface waters.

Aquifers are replenished by rivers and flow through soil deposited by rivers and glaciers over time. The boundaries of an aquifer align with the ancient pathways carved by these rivers and glaciers millions of years ago. This alignment occurs because rivers and glaciers typically follow the path of least resistance, shaping the routes for both present-day aquifers and rivers. Consequently, it can be inferred that the lost river aquifer traces the dry lost river channel until it converges with the mud lake, as depicted in figure 1.



Figure 1 Red lines represent Rivers and direction of flow. Blue line represents the high elevation separating the two valleys and two aquafers. Black lines represent the two aquafers that are being supplied independently of each other.

The boundary that separates the Snake River Aquifer from the Lost River Aquifer is a mountain range located between the Lost River and the Snake River. The peaks of this mountain range are known as buttes, and they form a straight line that divides the Mud Lake Valley from the Snake River Valley. Figure 2-5 illustrates that there are no water channels connecting the two valleys, nor are there soil deposits from glaciers between them. Consequently, there are no farms linking the two valleys. The valleys are physically separated by the mountain range, which marks the boundary of the aquifers as shown in Figure 2.



Figure 2 Red lines represent Rivers and direction of flow. Blue line represents the high elevation separating the two valleys and two aquafers. Black lines represent the two aquafers that are being supplied independently of each other. Elevations are shown along lost river and along ridge between the two valleys.



Figure 3 Red line shows mountain range that feeds the mud lake aquafer.



Figure 4 Solid blue lines represent active water channels, Hached blue lines represent dried up old channels.



Figure 5 Brown lines represent a consistent elevation of 1500 meters, note that the butte range is at a higher elevation than the surrounding terrain which explains the direction of the Lost River and corresponding aquifer.

In conclusion, the lost river valley and other valleys feeding the Mud Lake aquifer do not supply water to the Eastern Snake Plain Aquifer (ESPA) and should be excluded from the ESPA ACGWS.

While it is plausible that there may be fractures existing in the boundary previously described, the closest distance between the Lost River and the Snake River is 196,056 feet. Assuming water travels at one foot per day, it would take approximately 537 years to reach the Snake River. If the aquifer follows the dry riverbed path through Mud Lake first, the total distance to Twin Falls would be 255,182 feet, requiring about 3,557 years to arrive.

For an aquifer to flow effectively, there must be either a consistent surface source such as a river or a considerable slope by which gravity can pull the underground water. After the Lost River Valley, there is no surface water to push the water downward and outward, and the slope is significantly diminished. Thus, the only force driving the water would be the replenishment at the head of the aquifer. The valley's considerable width where the Lost River aquifer terminates causes the water within the aquifer to disperse in all directions, thereby reducing the headwater required to push the water in any specific direction within the aquifer.

This lack of propulsive force would result in extremely slow movement within the aquifer, even within the most porous rock medium. Consequently, the water from the Lost River Aquifer will not reach the Snake River Aquifer for hundreds or thousands of years. The idea of reducing the Lost River Valley's water consumption to accommodate water rights in the Snake River aquifer is impractical. If no valid measurement or appropriate relationship can establish a meaningful impact of the Lost River Valley on the Snake River Aquifer, regulation of the Lost River Valley would be unjustifiable. Moreover, it could not be expediently managed to effect change in the Snake River. Therefore, imposing such measures would cause undue economic harm to farms and cities residing in the Lost River Valley.



Figure 6 Distance from where the channel dries up until it arrives at the lowest point in the Mud lake valley aquafer. Assuming the water flows 1 foot per day, 1,100 feet down, and 255,182 feet across, it would take about 702 years to arrive at mud lake. However, a straight line to the snake river would take 537 years



Figure 7 Distance from where the lost river dries up at the surface until the ground water could theoretically reach Twin falls in the snake River aquafer. Assuming the water flows 1 foot per day, 2,200 feet down, and 1,278,379 feet across, it would take about 3,557 years to arrive at in Twin Falls.

It is also understood that there is an effort to achieve economic fairness by curtailing all pumps in the entire region, including the Snake River Valley and its tributaries, as well as the Lost River Valley. We must assert that such a measure would be inequitable, as the Snake River Aquifer is governed by the Snake River, which is replenished by many water deposits, while the Lost River Aquifer is governed by the Lost River. The drought cycles for these two valleys do not necessarily align. As previously discussed, these rivers are not interconnected and there is no way for the Snake River or it's aquifer to subsidize the water in the Lost River Valley.

In the event that the Lost River Valley experiences a drought one year, and the Snake River Valley reduces our water usage in another year due to their drought conditions, The Lost River Valley would face repercussions twice as often as the Snake River Valley. If curtailment is proposed as a solution, wouldn't it make sense that the whole Snake River Valley be curtailed when the Lost River experiences a drought? I don't think that this is something that the Snake River Valley would accept. Therefore, it would simply be best to leave the Lost River valley out of the ESPA ACGWS.

Furthermore, the Lost River Valley has a significantly shorter growing season compared to the Snake River Plain. Continuous water reductions year after year would severely impact our agricultural productivity, as most crops in our area require the full growing season to achieve a successful harvest. Our communities rely heavily on agriculture, the impact of ESPA ACGWS water curtailment orders on the Lost River Valley will effectively kill the economy of the valley and decimate the Macky, Moore, Arco, and Butte city communities.

These communities are not wealthy communities as it is. The Lost River Valley must not be part of the ESPA ACGWS.

I respectfully request that the Lost River Valley not be included in the ESPA ACGWS. Our community already faces significant challenges with our water resources. The valley has been addressing water issues for a very long time now. Please allow us to manage our local matters independently, as inclusion in broader initiatives where we have limited control, and no impact, would be detrimental to our farms and community.

Sincerely,

Pioneer Farms – King Mountain Ranch

Clint Webb

Michael Webb

Carol Webb