



State of Idaho

## DEPARTMENT OF WATER RESOURCES

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11/24/2017

### **RE: Avoiding injury to water users through Water Supply Bank rentals of ground water in the Wood River Valley**

The Water Supply Bank (Bank) cannot approve a request to rent water where the use of rental water would injure established water users. The surface and ground waters of the Big Wood River drainage are interconnected and diversions of ground water from wells can deplete the surface water flow in streams and rivers. Wood River Valley water users could be injured if extended depletions of the Big Wood River and its tributaries are caused by new, additional diversions of ground water authorized under rental agreements. To ensure that the Water Supply Bank can continue accepting rental requests for new and additional uses of water, while simultaneously protecting water users against injury, an interim ground water rental policy for the Wood River Valley has been established.

The interim rental policy includes:

- Delineating the Big Wood River aquifer into 19 ground water transaction zones;
- Keeping lease and rental transactions within the same transaction zones;
- Requiring stream depletion analyses for all rental transactions;
- Limiting all new rental agreements to one year durations; and,
- Conditioning some rental agreements such that the use of water will be curtailed once the flow of the Big Wood River drops below 189 cfs.

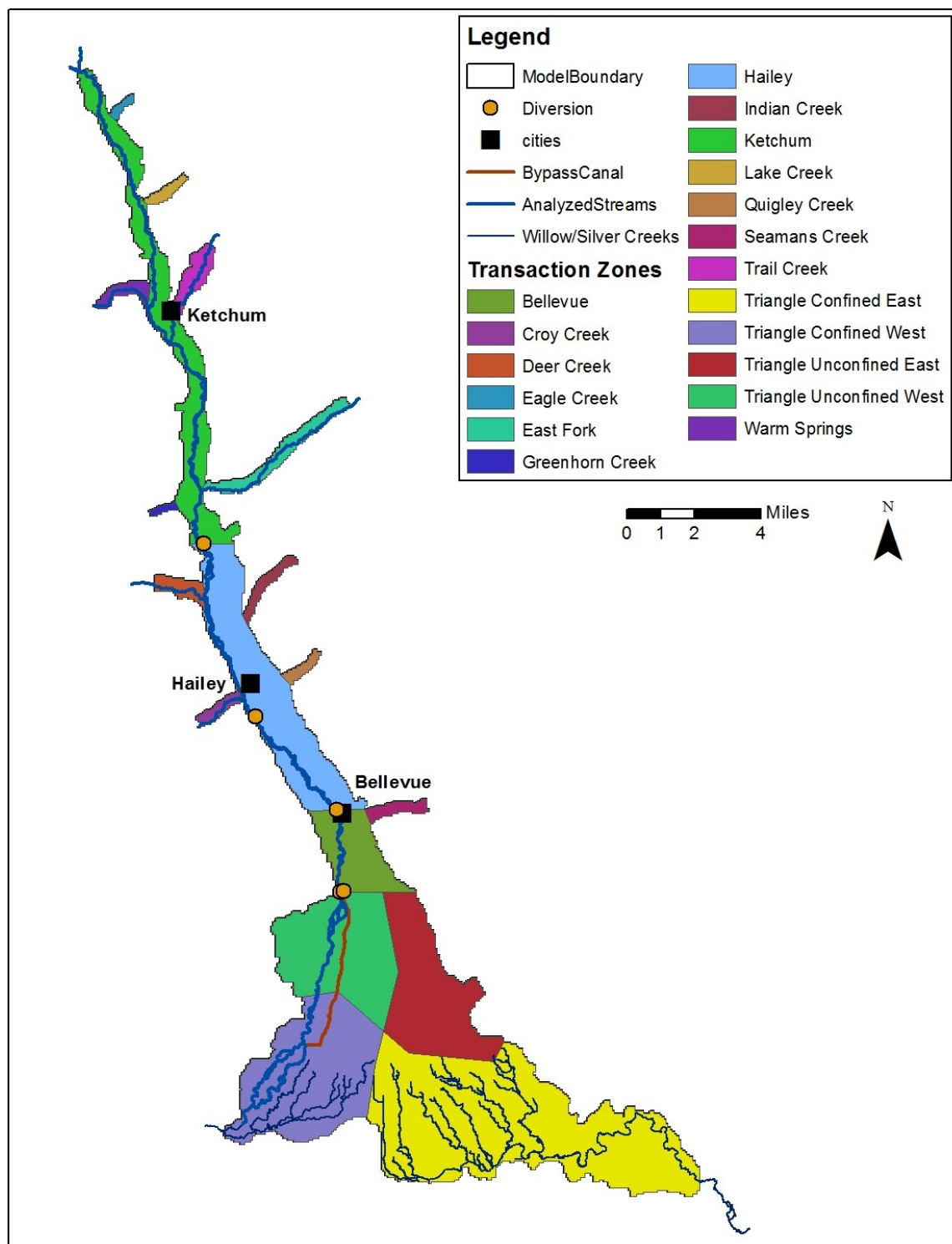
This interim rental policy applies to ground water rental requests only. Surface water rental requests are not impacted. All rental requests for ground water in the Wood River Valley should consider this rental policy carefully prior to submitting any rental application.

### **Wood River Valley transaction zones**

To protect the health of the Big Wood River ground water aquifer, nineteen zones have been delineated. Eleven zones have been created for each of the eleven major tributaries of the Big Wood River: Croy Creek, Deer Creek, Eagle Creek, East Fork, Greenhorn Creek, Indian Creek, Lake Creek, Quigley Creek, Seamen's Creek, Trail Creek and Warm Springs Creek. Three zones cover the valley itself, from the Sawtooth National Recreation Area in the north to Ohio Gulch Road (the Ketchum zone), from Ohio Gulch Rd to the city of Bellevue (the Hailey zone) and from Bellevue to the top of Bellevue Triangle at Glendale Road (the Bellevue zone). The remaining stretch of the valley is covered by four zones which correspond to the eastern and western halves of the confined and unconfined aquifers of the Bellevue Triangle. Finally, a single, two hundred foot wide zone runs the length of the valley and covers the Big Wood River channel itself, buffered on both sides by one hundred feet (the river zone).

### **Keeping lease and rental points of diversion within transaction zones**

The nineteen transaction zones cover all Big Wood River tributaries, as well as segments of the valley that are separated by significant points of diversion (PODs). To ensure already existing, localized impacts to surface and ground water are not allowed to propagate and cause injury elsewhere in the valley, ground water rentals within a specific zone should be satisfied from water rights leased into the Bank from within that same zone.



**Figure 1. Map of the Water Supply Bank Transaction Zones within the Wood River Valley**

## Stream depletion analyses for rental transactions

The Wood River Valley is bounded by mountain highlands, composed of impermeable crystalline rocks, between which permeable valley-fill sediments have been deposited, creating the ground water aquifer. Water flows well through the transmissive Wood River Valley aquifer and it is therefore important that the impacts of new or additional ground water rentals evaluate the impact of pumping on depletions of surface waters. To account for the impacts of ground water rental requests, stream depletion analyses (SDAs) are required for all rental transactions, with two important exceptions: 1) SDAs are not required if the lease and rental points of diversion are both within the two hundred foot wide river zone; and, 2) SDAs are not required if the distance between a lease POD and rental POD is less than 657 feet (200 meters). SDAs are not required within the river zone because IDWR has determined that water diverted from the ground is directly and immediately hydraulically connected to surface waters. Alternatively, SDAs are not required if the lease and rental zones are separated by less than 657 feet because IDWR accepts that such PODs would have an identical impact on ground water flows.

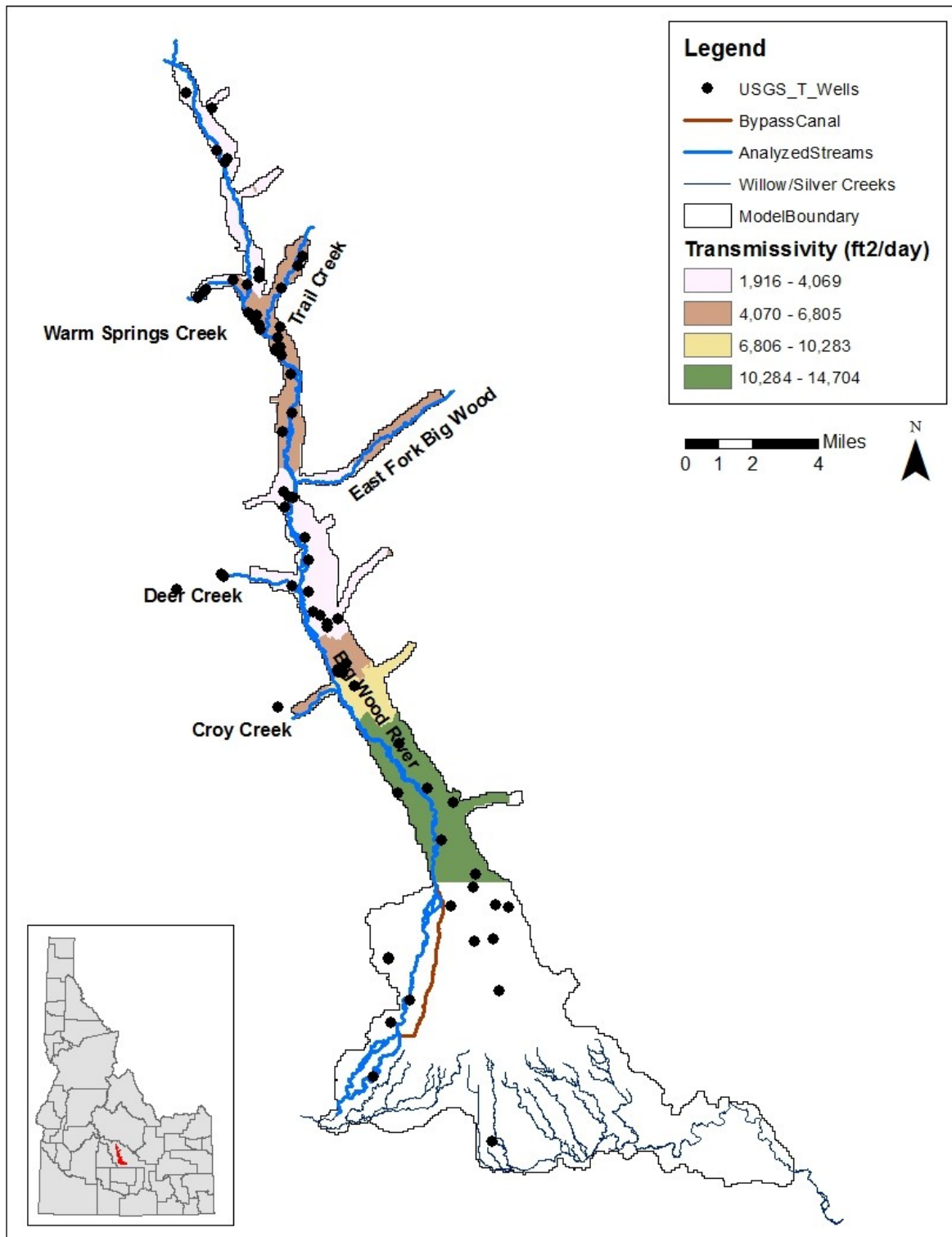
SDAs should calculate the accretion to surface water flows (caused by the suspension of ground water pumping at the leased POD) compared against depletions of surface water flows (attributable to ground water pumping at the rental POD). SDAs can be completed using the Integrated Decision Support Alluvial Water Accounting System (IDS AWAS), which is free software from Colorado State University, available for download from: <http://www.ids.colostate.edu/projects.php?project=awas/awas.html>.

AWAS software can be utilized to run either a Jenkins stream depletion factor analysis, or a Glover analytical stream depletion analysis, however aquifer boundary conditions should be set to **alluvial aquifer** with an **storage coefficient of 0.2**. SDAs also require a measurement of the radial distance from the lease and rental PODs to the Big Wood River (or relevant tributary streams), along with ground water pumping rate and the transmissivity of the aquifer in the area within which the transaction is proposed. To assist with SDAs, IDWR may accept the following default transmissivity values for transaction zones:

Zone	Transmissivity Value	Zone	Transmissivity Value
Deer Creek, Eagle Creek, Greenhorn Creek, Indian Creek, and Warm Springs Creek,	3,000	East Fork and Ketchum Zone	3,500
Croy Creek and Trail Creek	5,500	Hailey Zone and Quigley Creek	8,500
Bellevue and Seaman's Creek	12,500		

\*More detailed transmissivity values are provided in Figure 2

Additional requirements are required for ground water rentals within the confined aquifer of the Bellevue Triangle; within the eastern and western confined aquifer zones, an analysis of the ground water impacts that result from the accretion of water not diverted at the lease POD and a depletion of water diverted through the rental POD must be provided, along with stream depletion analyses for the Big Wood River. Within the eastern and western unconfined aquifer zones, stream depletion analyses are not required, only ground water impact analyses will be required.



**Figure 2. Transmissivity ratings for the Wood River Valley**

#### **Rental agreements of one year duration**

Ground water rentals approved in the Wood River Valley for 2015 will be authorized for a period of no more than one year, to allow for a revaluation of this interim rental policy in 2016.

**Additional conditional restrictions**

The Idaho Water Resource Board holds minimum stream flow (MSF) water rights for the Big Wood River. New or additional ground water usage authorized under a rental agreement may adversely impact the Board's MSF rights. Some rentals may be conditioned such that they must curtail their diversion of ground water once the Board's MSF rights for 189 cfs (as measured at the Hailey gage) is no longer being met.

**Acceptability of ground water modeling alternatives**

IDWR is implementing this interim policy so that ground water users seeking rental water can better understand data necessary to review their rental requests. All ground water rentals submitted to the Water Supply Bank following the data requirements described herein will receive standard processing. Though IDWR may consider alternative modeling for ground water rentals, such rentals will be subject to additional review by IDWR Hydrology staff and subject to the processing constraints of IDWR's Technical Services Bureau.