

MEMORANDUM

Date: March 19, 2010
To: Transfer file 70024
From: medl
Re: SW to GW connection

Transfer 70024 proposes a change in source from surface water to shallow groundwater for decreed right 63-32614. Section 42-222 Idaho Code does not provide for a change in source through a transfer. Administrator's Memorandum, Transfer Processing No. 24 provides additional guidance to use in reviewing applications such as this one for acceptability. Transfer Processing Memo 24 states that, "An application for transfer posing such a change in source is not approvable unless the ground water and surface water sources are so interconnected that they constitute the same source for purposes of a proposed change in point of diversion." The memo states further that the ground water and surface water sources must have a direct and immediate hydraulic connection and defines what direct and immediate would mean. The consultant did not submit information to meet that requirement. However, I have reviewed his submittals and documents related to the development of this subdivision which IDEQ supplied in response to an information request.

For other transfers proposing source changes from surface water to ground water, the department has relied on mathematical methods to model a river-well system and substantiate direct and immediate connection. The Jenkins method (USGS publication TWRI 4-D1 a) of creating image wells to depict subsurface conditions and defend the location of a well has been found acceptable for use in some transfer applications. In this case the modeling effort required to depict this scenario would be complex, involving several image wells to model flow from rivers on both sides of the shallow ground water site. The processing delay required to realistically represent this source change mathematically, would not be justified by the value that the estimate would provide to the transfer review.

In the case of Transfer 70024, the proposed change to the point-of-diversion is from the Boise River to shallow ponds which are excavated in an island surrounded by the Boise River. USGS gage #13206305 - Boise River South Channel at Eagle, is located less than a mile downstream of the place-of-use, the Rivers End subdivision on Eagle Island. The minimum flow at that gage for the period-of-record (November 1999 to present) is 66 cfs (+/- 10%). The maximum discharge authorized for the proposed shallow ground water pump would be 1.34 cfs. That rate is within the margin of error for the river gage so pumping from the shallow ponds would not show a measurable impact at the river gage.

Based on a review of lithographic logs from wells drilled in the vicinity, the shallow ponds are probably excavated into coarse gravel and sand layers typical of the upper layers of the soil column in the area. Those logs show water is often first encountered between 4 and 10 ft below ground. The subdivision soils were also discussed in a December 30, 2003 Geotechnical Report, written by Bob J Arnold, P.E. and addressed to the developer Jim Kiser. (The report was supplied by IDEQ through a public document request). In it the engineer stated that for the investigation test pit, ground water was encountered at 4.5 ft below ground surface and he described the soils from 2 to 6 ft below ground surface as sands, and sands and gravels.

Estimates of the pond depths were not provided in either the transfer application or in the companion application for permit. 17 shallow ponds with a total surface area of 11 acres, are proposed for aesthetic use in the subdivision. But according to the consultant only two ponds are interconnected and will provide water for irrigation. The volume of the ponds is unknown. 42 acre-foot for aesthetic storage is requested by the transfer application but the actual depths of the ponds will not be determined until the licensing field examination for the permit. In the geotechnical report referenced above, the engineer states that sloughing of the soil prevented test pit excavation below 6 ft. I expect that the proposed and existing shallow ponds are typically less than 10 ft deep. If these ponds are excavated into shallow sand and gravel layers and are unlined, then pond filling and refilling will depend primarily on shallow groundwater flow supplied by the river.

The ponds-to-river connection is not direct enough to maintain pond levels if pumping at the authorized rate of 1.34 cfs occurs. Even clean gravels do not typically have hydraulic conductivity in the range that will support an immediate replenishment equal to that discharge rate. Therefore, I would expect that there will be some drawdown of the two, interconnected ponds when they supply water for irrigation use. Recent taxlot information indicates that the River End Neighborhood Association owns common areas in the Rivers End Subdivision totaling less than 30 acres. 1.34 cfs would be more than sufficient to provide the irrigation requirement for those common areas.

Transfer 70024 acts on decreed right 63-92614 which has a priority date of 3/1/1865. Moving the point-of-diversion to the interior of Eagle Island would insert a senior surface water right into an area with some established ground water rights in place. I have confirmed that the Boise River watermaster is aware of the proposed diversion and is comfortable regulating it as a surface water diversion.

Even though these shallow ponds cannot be shown to have a direct and immediate connection to the river, I believe that it is reasonable to conclude that the source of their water is the Boise River. The place-of-use is an island in the Boise River and pond 8, the location of the irrigation pump, is sited equidistant (approximately 800 ft) from either the North or the South channels of the river. The preferred aquifer for domestic use is significantly deeper. Single and multiple-residence, domestic wells in this vicinity are commonly drilled to depths of 100-300 ft.

The former location of the point-of-diversion, accessing the Boise River for water right 63-32614 is now owned by others. According to the consultant, the last of the shallow aesthetic ponds have been created. The Rivers End subdivision is substantially developed. The homeowners association-right holders have chosen a diversion method which eliminates direct and immediate impact to the river but I believe that the Boise River remains the source for the water.