## Merritt, Allen

**From:** Travis Thompson [tlt@idahowaters.com]
**Sent:** Tuesday, July 21, 2009 3:24 PM
**To:** Spackman, Gary; Gibson, Deborah; Merritt, Allen
**Cc:** dana@idahowaterlaw.com
**Subject:** Dry Lot Applications - Revised Narrative
**Attachments:** 072109 Dry Lot Revised Narrative.pdf

Interim Director Spackman, Debbie

Please find attached a revised "Narrative" to replace the one filed with the amended applications on Monday at IDWR's Southern Regional Office. If I need to send in a hard copy please advise.

Thank you,

Travis

# Narrative in Support of Water Right Permit, Transfer and Mitigation Plan for Irrigation

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DEPT. OF WATER RESOURCES
SOUTHERN REGION

Dry Lot LLC

Charles E. Brockway, P.E.
Brockway Engineering, PLLC.

Revised
July 21, 2009

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Dry Lot LLC was formed by certain members of the Valley Club Homeowners Association or "Association" to purchase water rights and file the necessary applications subject of this narrative for their benefit.

The Valley Club Home Owners Association represents owners of the 99 lots in the Valley Club Subdivision in Blaine County Idaho. The subdivision was established in early 1990's and currently has residences on 40 lots (Figure 1). The Association holds two ground water right permits 37-8613A and 37- 8810 which provide in-house, irrigation, and fire protection water to all lots. The permit components are shown on Table 1.

Table 1 Water Right Permits-The Valley Club Home Owners Association

| Right No. | Priority Date | Proof Date | Use | Diversion Rate cfs | Irrig Acres | Diversion |
|---|---|---|---|---|---|---|
| 37-8613A | 4/4/1990 | 5/2/1996 | Irrigation & Domestic | 0.98 Irrig. 0.50 Domestic | 49.5 acres-limit 0.5 acres/residence | 2 wells |
| 37-8810 | 5/3/1993 | 8/18/1998 | Domestic & Fire Protection | 0.4 Domestic 3.4 Fire Protection | Domestic is for 99 units, clubhouse/restaurant and recreation center | 2 wells |

The two wells are located at the north end of the subdivision in the SWNWNW Sec 28 T3N R18E and pump into a looped distribution system. Drillers' logs for both wells are shown in Appendix A. Combined capacities of the two wells are adequate to provide the additional irrigation requirements contemplated under this plan for the benefit of Dry Lot's members. Based on the two existing water right permits, the allowable irrigated acreage from the system is 49.5 acres with each residential lot limited to 0.5 acres irrigated. Dry Lot LLC proposes to provide

irrigation water wherever possible to any lot owner up to an aggregate total irrigated acreage of 27.5 acres within the subdivision (separate from the existing permits for the Valley Club Owners Association). Dry Lot is desirous of securing a water right to allow 27.5 acres of irrigation within the subdivision. Accordingly, an application for permit for additional irrigation of 27.5 acres within the subdivision is being submitted with a ground water recharge mitigation plan utilizing surface water rights from the Big Wood River.

Dry Lot LLC has entered into an agreement with Old Cutters to purchase 27.5 acres of water rights 37-21130, 37-21137, and 37-21139 from the Big Wood River all with priority dates of 3/24/1883 and with a permissible place of use of 66 acres. The water right numbers for the above purchased water rights have been changed by IDWR to 37-22313, 37-22318 and 37-22323. Analyses of records of the Water District 37 Watermaster indicate that this priority right has been cut 16 times in the period 1948 through 2004 or 28 percent of years with the right in priority on average until September 15, average of about 153 days. The earliest it has been cut is July 1, as seen in Appendix B.

These water rights are decreed in the Snake River Basin Adjudication and water under these rights is diverted from the Big Wood River and conveyed through the Hiawatha Canal. The Hiawatha Canal conveys some 30 cfs of Big Wood River water rights to users adjacent to and south of the Valley Club subdivision. A pumping plant located on the Hiawatha Canal is owned and operated by the Valley Club and used to divert Big Wood River water rights to the Valley Club Golf Course and amenities. It is proposed to utilize this pumping plant and pipeline to divert and convey the newly acquired Big Wood River water rights acquired by Dry Lot LLC, currently conveyed in the Hiawatha Canal, to infiltration areas near the north end of the Valley Club Subdivision to mitigate for additional ground water extraction for irrigation of the additional 27.5 acres within the subdivision. All irrigation of the lots on the Valley Club Subdivision will be served from the two existing wells owned by the Valley Club Home Owners Association. Locations of the Hiawatha Canal, pump diversion, pipeline and proposed infiltration basins are shown on the aerial photograph, Figure 2.

Driller's logs for the two Valley Club Home Owners Association wells indicate sand gravel and clay media to a depth of 140 feet with static water levels of 64 to 71 feet below ground surface. Pumping tests indicate pumping levels of 79 to 84 feet for a discharge of 507 to 657 gpm. An irrigation well owned by the Valley Club Inc. (golf course) adjacent to the two municipal wells is 180 feet deep with sand, gravel and clay throughout the profile. The discharge for this well (locally called the "Mizer well") was reported by the driller to be 1800 gpm with a pumping level of 88 feet, as seen in Appendix A.

The Theis equation was used to quantify the additional aquifer drawdown resulting from pumping a maximum of 0.52 cfs from a single well to satisfy the additional peak daily consumptive irrigation requirements. Evaluation of the

Theis equation resulted in aquifer drawdown equal to 0.75 feet at a distance of 1000 feet from the well after continuous pumping for 40 days. This analysis is shown in Appendix A.

Alternate infiltration basin locations are proposed for the project. Field infiltration tests have been performed on the northern basin sites which indicate that the design infiltration rates are suitable for the native soils. Final location for the infiltration basins is pending final arrangements with Valley Club on use of facilities. Dual infiltration basins near the north end of the project and near the middle of the project as shown on Figure 2 are proposed. Water supplied from the pumping plant on the Hiawatha Canal through the pipeline will be delivered either to the northernmost basins on the Valley Club Homeowners property (Figure 2) or to the southern infiltration site directly from the pipeline (Figure 2). The infiltration basins will be subsurface galleries with perforated pipe distribution systems and not open ponds. Water will be pumped from the pipeline or the northern Valley Club pond to two or four infiltration basins. The sustainable infiltration rate for the infiltration basins is estimated at a minimum of 1.5 ft/day through a substrate of at least 18 inches of select filter sand. Based on an annual calculated infiltration requirement of 96.3 acre feet, and an infiltration period of 153 days, the average infiltration of the basins would be 0.63 acre feet per day or an average discharge of 0.32 cfs (144 gpm). With an infiltration rate of 1.5 ft/day, the basin wetted area required would be 0.42 acres or 18,300 square feet. The two sets of two proposed basins would be approximately 80 x115 feet each in size and located at least 500 feet from any existing wells.

If the northern site is utilized as the primary site, a pump from the Valley Club upper pond to the northern infiltration basins would be designed for a maximum discharge of 200 gpm. The lower (southern) set of basins would be served directly from the Valley Club pipeline. A totalizing flow meter is required on the Valley Club Inc. pumping system from the Hiawatha Canal and a meter with instantaneous readout and totalizer would be installed on the pipeline to the infiltration basins with monthly reporting to ascertain the volume infiltrated. Flow meters are currently installed on Valley Club Owners Association two existing domestic wells and total volumes pumped are documented to assure compliance with water rights.

The goal of the water right acquisition is to assure that an additional 27.5 acres can be irrigated anywhere on the subdivision, not limited to any specific acreage per lot. The 27.5 acres of irrigation allowed by the proposed permit and transfer can be allocated by Dry Lot LLC to its members anywhere in the subdivision. In addition, Dry Lot would like to assure that the full additional 27.5 acres could be irrigated for the full irrigation season even though the 3/24/1883 priority water right is not available for the full irrigation season. This mitigation plan proposes to assure that an adequate volume of water is replaced in the aquifer from the 3/24/1883 water right to mitigate the additional use on the 27.5 acres after the cutoff date to the end of the irrigation season. This plan is based on the

seasonal consumptive irrigation requirement on the new acres for the latter part of the irrigation season with no expansion of the water right discharge or volume.

The full season consumptive irrigation requirement (Pdef) for the 27.5 additional irrigated acres on the Valley Club Subdivision is estimated at 27.5 acres x 1.96 ac ft/acre or 53.9 acre feet for the full 183 day season. The seasonal irrigation diversion requirement from ground water assuming a "flood irrigation" efficiency for turf of 56% is 96.3 af/ year for the 27.5 acres. Since the average length of time the 3/24/1883 right is in priority is 153 days out of the 183 days in the established irrigation season, the additional consumptive irrigation requirement to extend the season from 153 days to 183 days is 0.162 ac ft/acre or 0.162 x 27.5 = 4.5 acre feet and the additional diversion requirement, assuming an irrigation efficiency of 56%, to extend the season is 4.5/.56 = 8.0 acre feet. Total required diversion of ground water including extension of irrigation for the full 183 day extended season is 96.3 acre feet. By operating the infiltration system at the minimum design discharge of 0.32 cfs for 153 days, from April 15 through September 15, approximately 96.3 acre feet will be recharged to the aquifer. Since the 96.3 acre feet of irrigation diversion assumes a low (56%) irrigation efficiency, the 96.3 acre feet recharged to the aquifer will be equal to or more than the required diversion. If a more efficient method of irrigation such as "sprinkler irrigation" is employed, which is probable, then the irrigation efficiency would be raised to 75%, which would result in lowering the irrigation diversion requirement to 71.9 acre feet. This is a reasonable factor of safety to assure that the irrigation season consumptive irrigation requirement of 53.9 acre feet and the total ground water diversion of up to 96.3 acre feet for the extended season are adequately mitigated. The maximum groundwater diversion value for flood irrigation through the season of 96.3 acre feet is equal to the infiltration volume of 96.3 acre feet; there is no net temporal impact on the aquifer. Consequently, the infiltration volume exceeds the diversion requirement throughout the irrigation season.

Since the ground water points of diversion (Association wells) and the northern infiltration basins are approximately 700 feet apart, the local effect on the aquifer will be minimal. Recharge using the lower (southern) set of infiltration basins will not impact the late season aquifer levels significantly since the volume expected for late season extension is only 8.0 acre feet. Pumping of the extended season volume of 8.0 acre feet is not expected to significantly impact any local ground water diversions. The proposed place of use for the recharge water made available by the recently purchased water rights 37-21130, 37-21137, and 37-21139 will consist of the entire subdivision as shown in Appendix E.

A maintenance program for the infiltration basins will be developed after final design and followed to assure that infiltration rates are maintained. This program will include maintenance of perforated pipe infiltration capacity and media renovation.

The present place of use of the water rights purchased for ground water mitigation is located on the Old Cutters property approximately three (3) miles south of the new proposed place of use on the Valley Club Subdivision, Figure 2.

The water rights purchased by Dry Lot LLC for mitigation of aquifer pumping require moving the diversion upstream in the Hiawatha Canal approximately 3.4 miles. The historical loss in this reach of the Hiawatha has been shared by water right holders with deliveries throughout the length of the canal. Recently (2006) a 4350 foot length of the Hiawatha Canal was rehabilitated by the Valley Club Inc. and lined with a membrane to reduce seepage. An analysis of seepage losses in the Hiawatha was performed by the IDWR Twin Falls Regional Office in conjunction with a previous transfer. This analysis shows that, with the recent lining of part of the canal, moving a total diversion of 1.66 cfs allowed under the Old Cutter's water rights upstream to the Valley Club Inc. pumping diversion on the canal will require 0.09 cfs (rounded to 0.1 cfs) to remain in the canal to make up the additional impact to down-canal water users. The spreadsheets showing the IDWR analysis are included in Appendix D.

A ground water model of the Big Wood River Valley aquifer from the East Fork downstream to the City of Bellevue was developed by Brockway Engineering PLLC to evaluate the changes in ground water levels and Big Wood River reach gain as a result of the proposed aquifer recharge and extraction mitigation plan. This model is a MODFLOW aquifer flow model and is fully described in the Final Report :" Development of a Ground Water Flow Model for the Big Wood River Aquifer: East Fork to Bellevue". The report is appended to this application. Simulation of the ground water system changes effected by the proposed project are fully described in the report. "Evaluation of the Impact of the Proposed Dry Lot, LLC Water Right Applications Using a Big Wood River Aquifer Groundwater Model". This report shows that the proposed ground water recharge and extraction project impact on aquifer water levels and river reach gains is minimal or zero.

Dry Lot LLC also entered into a *Water Rights Use Agreement* with the Big Wood Canal Company (BWCC) to resolve BWCC's protest. Pursuant to the agreement, Dry Lot voluntarily agreed to reduce its rate of diversion from the Big Wood River under the purchased water rights by 0.5 cfs. Therefore, 0.5 cfs will remain in the river to increase flows past the Hiawatha Canal headgate. The increased flows in the river will provide additional mitigation to surface water rights on the Big Wood River.

The proposed transfer includes 1.66 cfs of irrigation water rights. Since Dry Lot proposes to divert and leave 0.10 cfs in the Hiawatha Canal to mitigate carriage loss in the canal, and leave 0.50 cfs instream in the Big Wood River, this results in 1.06 cfs available for recharge. The average flow rate necessary for full mitigation by recharge is 0.32 cfs, well below the 1.06 cfs available under Dry Lot's water rights.