

MEMORANDUM

TO: Water Right Files 37-22313, 37-22318, and 37-22323
FROM: Aaron Marshall *AM*
DATE: December 14, 2009
SUBJECT: Application for Transfer No. 74449 and Application for Permit No. 37-22252

REVISIONS

After review with other IDWR staff, I made the following changes to the draft approval documents for Transfer No. 74449 and Permit No. 37-22252. For a comprehensive review of these applications, refer to my previous review memo dated November 24, 2009.

Proposed Elements of Water Rights in Transfer No. 74449

37-22313 1.33 cfs, 56.9 af, Ground Water Recharge
37-22318 0.16 cfs, 56.9 af, Ground Water Recharge
37-22323 0.17 cfs, 56.9 af, Ground Water Recharge
Comb. Limits 0.32 cfs & 56.9 af for recharge, 0.10 cfs in Hiawatha Canal, 1.24 cfs in Big Wood River

Proposed Conditions of Approval for Transfer No. 74449, all rights

1. The right holder shall accomplish the change authorized by this transfer within one year of the date of this approval.
2. Rights 37-22313, 37-22318, and 37-22323 mitigate for the depletion of water resulting from the diversion and use of water under Right 37-22252. To prevent injury to other water right holders, the right holder shall cease diverting 1.24 cfs of these rights from the Big Wood River. To prevent injury to other water right holders, the watermaster shall also deliver 0.10 cfs of these rights into the Hiawatha Canal where it shall remain undiverted. The amount of water delivered into the Hiawatha Canal pursuant to these rights shall not exceed the amount delivered into the recharge facility by more than 0.10 cfs. The combined diversion and use of water under rights 37-22313, 37-22318, and 37-22323 for ground water recharge is limited to a diversion rate of 0.32 cfs and a maximum annual diversion volume of 56.9 acre-feet as measured at the point(s) of injection.
3. Ground water recharge is accomplished by diverting water under this right into infiltration basin(s) that allow water to percolate into the underlying aquifer. To prevent the unauthorized above ground storage of water, the amount of water diverted and used for recharge under this right shall not exceed the actual infiltration capacity.
4. Prior to diversion and use of water under this right pursuant to Transfer approval 74449, the right holder must obtain a separate injection well permit.
5. Prior to diversion and use of water under this right pursuant to Transfer approval 74449, and in accordance with Department specifications, the right holder shall install and maintain:
 - a) A measuring device(s) and lockable controlling works at the point(s) of diversion from the Big Wood River,

b) A measuring device(s) and lockable controlling works at the point(s) water is conveyed from the Hiawatha Canal, and

c) A measuring device(s), including datalogger(s), at the point(s) of injection into the infiltration basin(s) used for ground water recharge to determine the amount of water injected annually. The right holder shall report the information to the Department by December 31 each year.

6. Use of water under this right will be regulated by a watermaster with responsibility for the distribution of water among appropriators within a water district. At the time of this approval, this water right is within State Water District No. 37.
7. The diversion and use of water described in Transfer 74449 may be subject to additional limitations agreed to by the protestant(s) and the right holder under separate agreement to which the Department is not a party and which may be enforceable by a court of law.
8. The approval of this transfer redefines all of the elements of this water right, and the new use of water authorized by this approval shall constitute the full extent of the right.
9. This right does not grant any right-of-way or easement across the land of another.
10. Failure of the right holder to comply with the conditions of this transfer is cause for the Director to rescind approval of the transfer.
11. Pursuant to Section 42-1412(6), Idaho Code, this water right is subject to such general provisions necessary for the definition of the rights or for the efficient administration of water rights as may be determined by the Snake River Basin Adjudication court at a point in time no later than the entry of the final unified decree.

Proposed Elements of Permit No. 37-22252

37-22252 0.50 cfs, Irrigation, 27.5 acres

Proposed Conditions of Approval for Permit No. 37-22252

1. Proof of application of water to beneficial use shall be submitted on or before December 1, 2014.
2. Subject to all prior water rights.
3. This right does not grant any right-of-way or easement across the land of another.
4. This right is limited to the irrigation of 27.5 acres within the place of use described above in a single irrigation season. *Note: Authorizing the irrigation of 27.5 acres will not decrease the amount of water available under other rights provided the right holder does not divert more water than injected for ground water recharge.*
5. The annual volume of water diverted under this right shall not exceed the annual volume of water delivered into the infiltration basin(s) for ground water recharge under rights 37-22313, 37-22318, and 37-22323 as measured at the point(s) of injection.
6. Prior to the diversion and use of water under this right, the right holder shall install and maintain acceptable measuring device(s), including data logger(s), at the authorized point(s) of diversion, in accordance with Department specifications, to determine the amount of water diverted annually. The right holder shall report the information to the Department by December 31 each year.

7. The water right holder shall maintain control of rights 37-22313, 37-22318, and 37-22323 for mitigation purposes pursuant to Transfer 74449.
8. This permit does not authorize the construction of any new well or the deepening or enlargement of any existing well.
9. The diversion and use of water described in this right may be subject to additional limitations agreed to by the protestant(s) and the right holder under separate agreement to which the Department is not a party and which may be enforceable by a court of law.
10. Any license issued by IDWR pursuant to the right or portion thereof for the use of trust water is subject to a term review of 20 years after the date of this approval to determine availability of water for the use and to re-evaluate the public interest at the end of the term.
11. Failure of the right holder to comply with any condition of approval is cause for the Director to cancel this permit.

MEMORANDUM

TO: Water Right Files 37-22252, 37-22313, 37-22318, and 37-22323
FROM: Aaron Marshall 
DATE: November 24, 2009
SUBJECT: Application for Transfer No. 74449 and Application for Permit No. 37-22252

OVERVIEW

On July 20, 2009, IDWR received an amended Application for Transfer No. 74449, which proposes changes to water rights 37-21130, 37-21137, and 37-21139. These rights were split in advance of the transfer approval based on a water right purchase agreement (see Second Amendment to Agreement for Purchase and Sale of Water Rights received August 20, 2009). The portions that are the subject of the agreement between Dry Lot LLC and Old Cutters Inc. and included in transfer 74449 are rights 37-22313 (1.33 cfs), 37-22318 (0.16), and 37-22323 (0.17 cfs). In accordance with the agreement, Dry Lot LLC will complete the purchase of these rights upon IDWR approval of Transfer No. 74449 and Application for Permit No. 37-22252.

Dry Lot LLC is proposing to change the place of use and nature of use of these rights to mitigate for the use proposed by Application for Permit No. 37-22252. The transfer proposes to change the nature of use of these Big Wood River rights from irrigation to recharge. The place of use is proposed to change to a location approximately 3 miles north from the current authorized place of use. The source of water will not change; water will still be diverted from the Big Wood River via the Hiawatha Canal. The applicant proposes diverting water under these rights into infiltration basins that will recharge the ground water aquifer to mitigate for the use proposed by Application for Permit No. 37-22252.

Application for Permit No. 37-22252 proposes using ground water from existing wells for irrigation of 27.5 acres of land in a 219-acre permissible place of use. Since the points of diversion are within the Big Wood River Ground Water Management Area and the Eastern Snake River Plain Moratorium Area, the proposed use must be fully mitigated.

On July 21, 2009, IDWR received, Narrative in Support of Water Right Permit, Transfer and Mitigation Plan for Irrigation, prepared by Charles E. Brockway for Dry Lot LLC. As stated in the narrative, "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...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."

Evaluation of Authority to File

Old Cutters Inc. is the current owner of water rights 37-22313, 37-22318, and 37-22323. Dry Lot LLC entered into an agreement with Old Cutters Inc. to purchase these rights upon approval of Transfer No. 74449 and Application for Permit No. 37-22252. Once acquisition of the transferred rights is final, Dry Lot LLC must submit a Notice of Change in Water Right Ownership pursuant to Idaho Code §42-248(1).

Evaluation of Water Right Validity

On January 21, 2009, the Snake River Basin Adjudication Court issued partial decrees for water rights 37-21130, 37-21137, and 37-21139, the base rights for rights 37-22313, 37-22318, and 37-22323. Each

right involved in this transfer has a priority date of 03/24/1883 with a source of the Big Wood River. These rights are valid and have not been forfeited due to nonuse.

Enlargement of Use and Mitigation Value

Appendix B of Brockway's narrative provides dates when water rights with a 03/24/1883 priority date, including rights 37-22313, 37-22318, and 37-22323, have been curtailed by the watermaster of Water District 37. Information provided by the watermaster indicates this priority date has been curtailed in 18 out of 61 years, from 1948 through 2008. In years this priority date is cut, the average curtailment date is August 7, resulting in an irrigation season of approximately 115 days (Attachment A).

I used information from the ET-Idaho web site (<http://www.kimberly.uidaho.edu/ETIdaho/>) to evaluate the historic consumptive use of the water rights involved in the transfer (Attachments B and C). Information used in Brockway's narrative suggests that these rights have historically been used for irrigation of alfalfa with frequent cuttings. After discussing this point with Allen Merritt, IDWR Southern Region manager, it is more likely that these rights have historically been used for irrigation of alfalfa with less frequent cuttings. Using data for either scenario produces identical results of the mitigation value for these rights in terms of acres. The net irrigation requirement near Hailey for alfalfa crops with less frequent cuttings is 2.07 feet per year for the full growing season. In years when the 03/24/1883 priority date has been curtailed, the average net irrigation requirement, based on 115 days of use, is 1.38 feet per year. Taking the weighted average net irrigation requirement for 27.5 acres that is curtailed 18 out of 61 years provides a historic consumptive use volume of 51.3 acre-feet per year. Dividing the average annual historic consumptive use volume by the net irrigation water requirement provides a mitigation value for these rights in terms of acres: $51.3 \text{ af/yr} / 2.07 \text{ ft/yr} = 24.8 \text{ acres}$.

The right authorized for recharge should be limited to an annual volume consistent with the consumptive use volume associated with the land no longer irrigated: $27.5 \text{ acres} \times 2.07 \text{ ft/yr} = 56.9 \text{ af/yr}$.

Since the goal of filing the transfer and permit applications is to ensure that land can be irrigated with ground water for the full irrigation season even when the 3/24/1883 priority water rights are curtailed, permit 37-22252 should be limited to irrigation of 24.8 acres.

To ensure that the water right used for recharge is not enlarged, diversion of water under this right into the Hiawatha Canal must not exceed the rate and volume of water diverted for ground water recharge.

Injury to Other Water Rights

IDWR engineer John Lindgren reviewed two reports prepared by Brockway Engineering, Development of a Groundwater Flow Model for the Big Wood River Aquifer: East Fork to Bellevue and Evaluation of the Impact of the Proposed Dry Lot LLC Water Right Applications Using a Big Wood River Aquifer Groundwater Model. Lindgren reviewed the ground water flow model and its use to evaluate hydrologic impacts resulting from the water uses proposed by Transfer No. 74449 and Application for Permit No. 37-22252. Brockway simulated two scenarios for the proposed uses: 1) recharge at the southern infiltration site, and 2) recharge at the northern infiltration site. For each scenario, Lindgren explains that the "results provide reasonable estimates of the impacts of the transfer and mitigation as modeled."

Each scenario simulates effects in two model reaches of the Big Wood River: 1) Northern Boundary to Starweather Bridge, and 2) Starweather Bridge to Deer Creek Bridge. Other modeled reaches were unaffected in the simulation. Scenario 1 simulates a 3 af/yr decrease in flow to Reach 1 and a 14 af/yr increase in flow to Reach 2. Scenario 2 simulates a 2 af/yr increase in flow to Reach 1 and a 3 af/yr decrease in flow to Reach 2. Both scenarios indicate some reduction in flow in the Big Wood River with the potential to cause injury to other surface water rights in a fully appropriated basin. However, the model does not simulate the effects of leaving 0.50 cfs in the Big Wood River as described in the water

rights use agreement between Dry Lot LLC and Big Wood Canal Company (BWCC). Depletions in river flow downstream of the Hiawatha Canal diversion would be mitigated by this water, amounting to approximately 30 acre-feet per month during the irrigation season, when water is available under the 03/24/1883 priority date. Proposed groundwater diversions in excess of the total seasonal volume of water used for aquifer recharge would reduce Big Wood River flows and groundwater levels thereby causing injury to other water rights. Permit 37-22252 should be conditioned so the annual volume of ground water diverted for irrigation does not exceed the annual volume of surface water diverted and used for recharge under Transfer 74449. Additionally, since the ground water recharge process is less than 100% efficient, the water right authorized for recharge should be used to the fullest extent possible when available to minimize potential impacts to the aquifer in time and quantity. To avoid injury caused by the potential difference in the timing of recharge and ground water diversion, the recharge right should be limited to a rate of 0.32 cfs, equivalent to the proposed infiltration capacity.

As described in Brockway's narrative, Dry Lot LLC proposes to divert 0.10 cfs from the Big Wood River and leave this water in the Hiawatha Canal. This water will mitigate for impacts to other water rights conveyed through the Hiawatha Canal that would otherwise incur an increase in water lost to seepage. To avoid injury to other water rights conveyed through the Hiawatha Canal, a 0.10 cfs portion of the transferred rights should be described as mitigation in addition to the 0.50 cfs left in the Big Wood River.

Brockway used the Theis solution to estimate aquifer drawdown caused by pumping 0.52 cfs from a single well for the proposed irrigation. Brockway estimates a 0.75 ft decline in ground water levels at a radial distance of 1,000 ft from the pumping well after 40 days of continuous pumping at a rate of 0.52 cfs and a 1.33 ft decline at a distance of 500 ft under the same conditions. While Brockway's analysis indicates the proposed use will cause ground water level declines, it is unlikely that such changes will lower ground water levels beyond reasonable pumping levels in adjacent wells.

Local Public Interest

Dry Lot LLC entered into a stipulation with Indian Creek Ranch Owner's Association (ICROA) through which ICROA withdrew its protest to the applications.

Dry Lot LLC and BWCC entered into a water rights use agreement through which BWCC withdrew its protest to the applications. Dry Lot LLC agrees to leave 0.50 cfs undiverted from the Big Wood River. The nature of use for this 0.50 cfs portion should be changed to mitigation.

Beneficial Use and Conservation of Water Resources

Ground water recharge is a recognized beneficial use. Recharge, in this case, is to mitigate for irrigation proposed under a new application for permit in a fully appropriated basin. There is no clear inconsistency with the State Water Plan concerning beneficial use and conversation of water resources.

Effect on Economy of Local Area

No information has been provided to describe the potential effect to the economy of the local area. Approval of these applications will not likely have a negative effect on the local economy.

Effect on Agricultural Base of the Local Area

The water rights involved in the transfer are appurtenant to 27.5 acres of land, a small fraction of the total irrigated land in the local area. Therefore, it is unlikely that the change will "significantly affect the agricultural base of the local area" as outlined in Idaho Code § 42-222(1).

Proposed Elements of Water Rights in Transfer No. 74449

37-22313	1.06 cfs (limited to 0.32 cfs), 56.9 af, Recharge for Irrigation
	0.27 cfs, Mitigation (0.10 cfs, Hiawatha Canal & 0.17 cfs, Big Wood River)

37-22318 0.16 cfs, Mitigation (Big Wood River)

37-22323 0.17 cfs, Mitigation (Big Wood River)

Proposed Conditions of Approval for Transfer No. 74449

1. (37-22313) The portion of this right authorized for recharge mitigates for the depletion of water resulting from the diversion and use of water under Right 37-22252. Recharge is accomplished by diverting water under this right into infiltration basin(s) that allow water to percolate into the underlying aquifer. To prevent the unauthorized above ground storage of water, the amount of water diverted and used for recharge under this right shall not exceed the actual infiltration capacity. *Note: This condition is necessary to prevent the right holder from storing water at the surface and exposing it to evaporation; thereby, injuring other existing water rights by not providing adequate mitigation through groundwater recharge.*
2. (37-22313) The use of water under this right for ground water recharge is limited to a diversion rate of 0.32 cfs and a maximum annual diversion volume of 56.9 acre-feet as measured at the point(s) of diversion from the Hiawatha Canal. *Note: The applicant plans to construct the infiltration galleries with an infiltration capacity of 0.32 cfs. If the applicant diverts water at this rate for 90 days, the earliest date that the 56.9 acre-feet volume will be reached is July 13. This practice may adequately mitigate for continued groundwater withdrawals during the remainder of the irrigation season. If the applicant diverts 1.06 cfs for recharge purposes, the 56.9 acre-feet volume will be reached after just 27 days and as early as May 11. This practice would not likely recharge the aquifer adequately to have residual effects lasting throughout the irrigation season. To avoid injury caused by the potential difference in the timing of recharge and late season ground water diversion, the recharge right should be limited to a rate of 0.32 cfs, a rate equivalent to the proposed infiltration capacity.*
3. (37-22313) The diversion of water under this right from the Big Wood River into the Hiawatha Canal is limited to the rate simultaneously diverted from the Hiawatha Canal for ground water recharge. *Note: This condition is necessary to ensure that the Hiawatha Canal is not diverting more water than is used under this right. The diversion of more water into the canal than is diverted under this right for the authorized uses would enlarge the right by providing an additional beneficial use of water.*
4. (37-22313) Prior to diversion and use of water under this right for recharge purposes pursuant to Transfer approval 74449, the right holder must obtain a separate injection well permit. *Note: This condition is necessary to address local public interest concerns expressed by the Idaho Department of Environmental Quality and to comply with IDWR Underground Injection Control program requirements. The infiltration gallery design, as proposed, would meet the definition of a shallow injection well.*
5. (37-22313) Prior to diversion and use of water under this right pursuant to Transfer approval 74449, the right holder shall install and maintain acceptable measuring device(s), including data logger(s), at the point(s) of injection into the infiltration basin(s) used for ground water recharge, in accordance with Department specifications to determine the amount of water injected annually and shall report the information to the Department by December 31 each year. *Note: This condition is necessary to ensure adequate mitigation for permit 37-22252.*
6. (37-22313) Prior to diversion of water under this right pursuant to Transfer approval 74449, the right holder shall install and maintain a measuring device and lockable controlling works of a type acceptable to the Department as part of the diverting works from the Hiawatha Canal. *Note: This condition will provide the watermaster with the tools necessary to administer this right in accordance with the conditions described above, specifically condition no. 3.*
7. (37-22313) This right mitigates for the injury to other water rights caused by the diversion and use of water under Right 37-22252. To prevent injury to other water right holders, the watermaster shall

deliver 0.10 cfs of this right into the Hiawatha Canal where it shall remain undiverted; the remaining 0.17 cfs authorized for mitigation under this right shall remain in the undiverted in the Big Wood River.

8. (37-22318 & 37-22323) This right mitigates for the injury to other water users caused by the diversion and use of water under Right 37-22252. To prevent injury to other water right holders, this right shall remain undiverted in the Big Wood River.

9. (all rights) Use of water under this right will be regulated by a watermaster with responsibility for the distribution of water among appropriators within a water district. At the time of this approval, this water right is within State Water District No. 37.

10. (all rights) The right holder shall accomplish the change authorized by this transfer within one year of the date of this approval.

11. (all rights) Failure of the right holder to comply with the conditions of this transfer is cause for the Director to rescind approval of the transfer.

12. (all rights) The diversion and use of water described in Transfer 74449 may be subject to additional limitations agreed to by the protestant(s) and the right holder under separate agreement to which the Department is not a party and which may be enforceable by a court of law.

13. (all rights) The approval of this transfer redefines all of the elements of this water right, and the new use of water authorized by this approval shall constitute the full extent of the right.

14. (all rights) This right does not grant any right-of-way or easement across the land of another.

Proposed Elements of Permit No. 37-22252

37-22252 0.50 cfs, Irrigation, 24.8 acres

Proposed Conditions of Approval for Permit No. 37-22252

1. This right does not grant any right-of-way or easement across the land of another.
2. This right is limited to the irrigation of 24.8 acres within the place of use described above in a single irrigation season.
3. The annual volume of water diverted under this right shall not exceed the annual volume of water used for ground water recharge under right 37-22313.
4. Prior to the diversion and use of water under this right, the right holder shall install and maintain acceptable measuring device(s), including data logger(s), at the authorized point(s) of diversion, in accordance with Department specifications to determine the amount of water diverted annually and shall report the information to the Department by December 31 each year. *Note: This condition is necessary to ensure the right holder complies with condition no. 3 described above. There is not currently a water district in place to administer this groundwater right so the right holder should report this information to the Department. A water district may be created in the future pursuant to conjunctive management rules. This condition may be reconsidered at the time of licensing.*
5. The water right holder shall maintain control of rights 37-22313, 37-22318, and 37-22323 for mitigation purposes pursuant to Transfer 74449. If rights 37-22313, 37-22318, and 37-22323 are sold, transferred, leased, or used on any place of use, then the amount of water authorized for diversion under this right shall be reduced by the same proportion of the amount reduced under the mitigation rights.
6. This permit does not authorize the construction of any new well or the deepening or enlargement of any existing well. *Note: The injury analysis and mitigation plan for this permit is based*

on two existing wells. The construction of a new well or change to an existing well for use by this right may injure other water rights. The applicant proposes using the two existing wells.

7. The diversion and use of water described in this right may be subject to additional limitations agreed to by the protestant(s) and the right holder under separate agreement to which the Department is not a party and which may be enforceable by a court of law.

8. Any license issued by IDWR pursuant to the right or portion thereof for the use of trust water is subject to a term review of 20 years after the date of this approval to determine availability of water for the use and to re-evaluate the public interest at the end of the term.

9. Failure of the right holder to comply with any condition of approval is cause for the Director to cancel this permit.

NUMBER OF DAYS IN IRRIGATION SEASON WHEN 03/24/1883 PRIORITY DATE IS CUT BY WATERMASTER

2064	114.67
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DAYS→		130	117	102	134	130	116	136	110	120	91	78	110	107	123	122	121	130	87	Total Days		Avg. # Days	
DATE	YEAR→	1949	1960	1961	1966	1973	1979	1987	1988	1991	1992	1994	2000	2001	2002	2003	2004	2005	2007	2064	114.67		
15-Apr		1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1				
16-Apr		1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1				
17-Apr		1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1				
18-Apr		1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1				
19-Apr		1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1				
20-Apr		1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1				
21-Apr		1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1				
22-Apr		1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1				
23-Apr		1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1				
24-Apr		1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1				
25-Apr		1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1				
26-Apr		1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1				
27-Apr		1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1				
28-Apr		1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1				
29-Apr		1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1				
30-Apr		1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1				
1-May		1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1				
2-May		1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1				
3-May		1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1				
4-May		1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1				
5-May		1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1				
6-May		1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1				
7-May		1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1				
8-May		1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1				
9-May		1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1				
10-May		1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1				
11-May		1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1				
12-May		1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1				
13-May		1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1				
14-May		1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1				
15-May		1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1				
16-May		1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1				
17-May		1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1				
18-May		1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1				
19-May		1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1				
20-May		1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1				
21-May		1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1				
22-May		1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1				
23-May		1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1				
24-May		1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1				
25-May		1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1				
26-May		1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1				
27-May		1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1				
28-May		1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1				
29-May		1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1				
30-May		1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1				
31-May		1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1				
1-Jun		1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1				
2-Jun		1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1				
3-Jun		1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1				
4-Jun		1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1				
5-Jun		1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1				
6-Jun		1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1				
7-Jun		1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1				
8-Jun		1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1				
9-Jun		1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1				
10-Jun		1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1				
11-Jun		1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1				
12-Jun		1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1				
13-Jun		1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1				
14-Jun		1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1				
15-Jun		1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1				
16-Jun		1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1				
17-Jun		1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1				
18-Jun		1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1				
19-Jun		1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1				
20-Jun		1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1				

21-Jun		1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1
22-Jun		1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1
23-Jun		1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1
24-Jun		1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1
25-Jun		1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1
26-Jun		1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1
27-Jun		1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1
28-Jun		1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1
29-Jun		1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1
30-Jun		1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1
1-Jul		1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1
2-Jul		1	1	1	1	1	1	1	1	1	78	1	1	1	1	1	1	1
3-Jul		1	1	1	1	1	1	1	1	1		1	1	1	1	1	1	1
4-Jul		1	1	1	1	1	1	1	1	1		1	1	1	1	1	1	1
5-Jul		1	1	1	1	1	1	1	1	1		1	1	1	1	1	1	1
6-Jul		1	1	1	1	1	1	1	1	1		1	1	1	1	1	1	1
7-Jul		1	1	1	1	1	1	1	1	1		1	1	1	1	1	1	1
8-Jul		1	1	1	1	1	1	1	1	1		1	1	1	1	1	1	1
9-Jul		1	1	1	1	1	1	1	1	1		1	1	1	1	1	1	1
10-Jul		1	1	1	1	1	1	1	1	1		1	1	1	1	1	1	1
11-Jul		1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	87
12-Jul		1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	
13-Jul		1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	
14-Jul		1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	
15-Jul		1	1	1	1	1	1	1	1	1	91	1	1	1	1	1	1	
16-Jul		1	1	1	1	1	1	1	1	1		1	1	1	1	1	1	
17-Jul		1	1	1	1	1	1	1	1	1		1	1	1	1	1	1	
18-Jul		1	1	1	1	1	1	1	1	1		1	1	1	1	1	1	
19-Jul		1	1	1	1	1	1	1	1	1		1	1	1	1	1	1	
20-Jul		1	1	1	1	1	1	1	1	1		1	1	1	1	1	1	
21-Jul		1	1	1	1	1	1	1	1	1		1	1	1	1	1	1	
22-Jul		1	1	1	1	1	1	1	1	1		1	1	1	1	1	1	
23-Jul		1	1	1	1	1	1	1	1	1		1	1	1	1	1	1	
24-Jul		1	1	1	1	1	1	1	1	1		1	1	1	1	1	1	
25-Jul		1	1	1	1	1	1	1	1	1		1	1	1	1	1	1	
26-Jul		1	1	102	1	1	1	1	1	1		1	1	1	1	1	1	
27-Jul		1	1		1	1	1	1	1	1		1	1	1	1	1	1	
28-Jul		1	1		1	1	1	1	1	1		1	1	1	1	1	1	
29-Jul		1	1		1	1	1	1	1	1		1	1	1	1	1	1	
30-Jul		1	1		1	1	1	1	1	1		1	1	1	1	1	1	
31-Jul		1	1		1	1	1	1	1	1		1	107	1	1	1	1	
1-Aug		1	1		1	1	1	1	1	1		1		1	1	1	1	
2-Aug		1	1		1	1	1	1	1	1		1		1	1	1	1	
3-Aug		1	1		1	1	1	1	110	1		110		1	1	1	1	
4-Aug		1	1		1	1	1	1	1	1				1	1	1	1	
5-Aug		1	1		1	1	1	1	1	1				1	1	1	1	
6-Aug		1	1		1	1	1	1		1				1	1	1	1	
7-Aug		1	1		1	1	1	1		1				1	1	1	1	
8-Aug		1	1		1	1	1	1		1				1	1	1	1	
9-Aug		1	1		1	1	116	1		1				1	1	1	1	
10-Aug		1	117		1	1		1		1				1	1	1	1	
11-Aug		1			1	1		1		1				1	1	1	1	
12-Aug		1			1	1		1		1				1	1	1	1	
13-Aug		1			1	1		1		120				1	1	1	1	
14-Aug		1			1	1		1						1	1	121	1	
15-Aug		1			1	1		1						1	122		1	
16-Aug		1			1	1		1						123			1	
17-Aug		1			1	1		1									1	
18-Aug		1			1	1		1									1	
19-Aug		1			1	1		1									1	
20-Aug		1			1	1		1									1	
21-Aug		1			1	1		1									1	
22-Aug		1			1	1		1									1	
23-Aug		130			1	130		1									130	
24-Aug					1			1										
25-Aug					1			1										
26-Aug					1			1										
27-Aug					134			1										
28-Aug								1										
29-Aug								136										
30-Aug																		
31-Aug																		

ATTACHMENT B

Precipitation Deficit (Net Irrigation Water Requirement): Alfalfa - less frequent cuttings

Hailey Ranger Station (NWS NOAA--103942): Statistics based on 30 years between 1947 to 1981

<http://www.kimberly.uidaho.edu/ETIdaho/>

	Jan	Feb	Mar	Apr	May	Jun	Jul	Aug	Sep	Oct	Nov	Dec	Growing Season	Annual
Mean	mm/day													mm
Monthly	-0.15	0.08	0.21	0.54	2.23	5.07	4.97	5.41	2.29	0.86	-0.52	-0.54	631	641
15-Day Moving Avg	-0.1	0.05	0.22	0.49	2.13	5.08	4.68	5.49	2.1	0.87	-0.75	-0.51		
7-Day Moving Avg	-0.13	0.06	0.21	0.5	2.18	5.02	4.83	5.47	2.16	0.85	-0.63	-0.54		
3-Day Moving Avg	-0.14	0.08	0.21	0.53	2.23	5.05	4.94	5.43	2.24	0.86	-0.55	-0.54		

43 out of 61 years	
Irrigation Season, no priority cut year = 04/15 - 10/31 = 200 days	
Growing Season Net Irrigation Requirement =	631 mm
Total mm = 631.00 Total in = 24.84 Total ft = 2.07	
Historic consumptive use of rights 37-22313, 37-22318, and 37-22323 when no priority cut = 27.5 ac x 2.07 ft/year = 56.93 afa 43 years x 56.93 afa = 2447.99 af	

18 out of 61 years	
Irrigation Season, avg. priority cut year = 04/15 - 08/07 = 115 days	
Month	Days - priority cut
April	16
May	31
June	30
July	31
August	7
September	0
October	0
Total mm = 421.81 Total in = 16.61 Total ft = 1.38	
Historic consumptive use of rights 37-22313, 37-22318, and 37-22323 when priority is cut = 27.5 ac x 1.38 ft/year = 37.95 afa 18 years x 37.95 afa = 683.1 af	

Weighted Average Historic Consumptive Use Volume = (2448 af + 683.1 af) / 61 years = 51.3 afa

Mitigation value of rights 37-22313, 37-22318, and 37-22323 based on historic consumptive use volume and consumptive irrigation water requirement = 51.3 afa / 2.07 ft = 24.8 acres

ATTACHMENT C

Precipitation Deficit (Net Irrigation Water Requirement): Alfalfa - frequent cuttings

Hailey Ranger Station (NWS NOAA--103942): Statistics based on 30 years between 1947 to 1981

<http://www.kimberly.uidaho.edu/ETIdaho/>

	Jan	Feb	Mar	Apr	May	Jun	Jul	Aug	Sep	Oct	Nov	Dec	Growing Season	Annual
Mean	mm/day													mm
Monthly	-0.24	0.08	0.21	0.55	2.37	4.97	5.52	4.53	3.16	0.66	-0.62	-0.58	643	643
15-Day Moving Avg	-0.2	0.05	0.22	0.49	2.28	5.07	5.49	4.28	3.12	0.66	-0.84	-0.64		
7-Day Moving Avg	-0.23	0.06	0.21	0.51	2.33	4.99	5.49	4.42	3.13	0.64	-0.74	-0.62		
3-Day Moving Avg	-0.24	0.08	0.21	0.53	2.37	4.98	5.51	4.51	3.15	0.66	-0.65	-0.59		

43 out of 61 years	
Irrigation Season, no priority cut year = 04/15 - 10/31 = 200 days	
Growing Season Net Irrigation Requirement =	643 mm
Total mm = 643.00 Total in = 25.31 Total ft = 2.11	
Historic consumptive use of rights 37-22313, 37-22318, and 37-22323 when no priority cut = 27.5 ac x 2.11 ft/year = 58.025 afa 43 years x 58.025 afa = 2495.1 af	

18 out of 61 years	
Irrigation Season, avg. priority cut year = 04/15 - 08/07 = 115 days	
Month	Days - priority cut
April	16
May	31
June	30
July	31
August	7
September	0
October	0
Total mm = 434.20 Total in = 17.09 Total ft = 1.42	
Historic consumptive use of rights 37-22313, 37-22318, and 37-22323 when priority is cut = 27.5 ac x 1.42 ft/year = 39.05 afa 18 years x 39.05 afa = 702.9 af	

Weighted Average Historic Consumptive Use Volume = (2495.1 af + 702.9 af) / 61 years = 52.4 afa

Mitigation value of rights 37-22313, 37-22318, and 37-22323 based on historic consumptive use volume and consumptive irrigation water requirement = 52.4 afa / 2.11 ft = 24.8 acres