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Water Resources

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Department of Water Resources
Southern Region

November 13, 2002

Mr. Norm Semanko
205 North 10th Street, Ste 530
Boise, ID 83702

Mr. Pat Brown
P.O. Box 207
Twin Falls, ID 83303

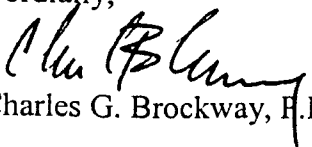
Re: USFS water right applications – Pomerelle ski resort
Project No. 197-01-1997

Dear Norm and Pat:

Enclosed is a hydrologic plan and mitigation proposal for the transfer and permit applications for the Pomerelle ski resort. The proposal essentially reflects the verbal concurrence that Terry Scanlan and I reached regarding the water balance for the facility and the effect on the Howell Creek watershed. The main change from the original proposal is that the on-hill storage would be largely refilled by continued diversion from the springs after snowmaking ceases. This greatly reduces the volume of natural snowmelt captured by the storage, and results in an augmentation of spring runoff in the Howell Creek drainage by an estimated 13.1 acre-feet. Consumptive use would be mitigated by reduction of irrigation under water right 45-311.

Please review the proposal and discuss it with your clients and Terry. I would request that we have a telephone conference during the first week of December with you, myself, Terry, Roger Ling, Randy Bramer, and Steve Spencer. I will contact you toward the end of November to set up the conference.

Cordially,


Charles G. Brockway, P.E.

Enc: Mitigation Proposal

Cc: Woody Anderson
Roger Ling
Randy Bramer
Steve Spencer

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Hydrologic Plan for Mitigating the Impact of Water Withdrawal and Storage at the Pomerelle Ski Area

Water right Transfer Application No. 5194
Water right Permit Application No. 45-7745
November 13, 2002

Prepared by
C. G. Brockway, P.E.

The proposed use at the Pomerelle Ski Area involves artificial creation of snow using two standard 60-gpm snowmaking guns. The process will occur over a 75-day period from October 15 through December 31 each year, with approximately 55 days of actual snowmaking occurring within this period for 16 hours per day.

A total of 19.4 acre-feet per season will be required for snowmaking. It is proposed to supply this water through a combination of withdrawal from Howell Creek via the existing pump during the snowmaking period, and from on-hill storage. An analysis of the timing and magnitude of water uses and the effects on Howell Creek was performed assuming a maximum of 27 gpm can be withdrawn from the springs (Bennett Springs plus Pomerelle Spring). 27 gpm withdrawn for 75 days provides 8.9 acre-feet, or about 46% of the total water requirement. The remaining 10.5 ac-ft will be supplied from on-hill storage.

An analysis was made of the projected water usage for snowmaking, and the potential impact on the Howell Creek watershed. Please refer to the enclosed diagram showing the water flow paths and the spreadsheet detailing the water balance calculations.

Snowmaking water will be applied to the hill and stored along with the natural snowpack. During the snowmaking process, some of the water is consumptively used. Based on previous studies by Brockway Engineering for the Sun Valley Company and for Bogus Basin, a reasonable average estimate of consumptive use is 10% of the total water volume. Thus, of the 19.4 acre-feet used for snowmaking, about 1.94 acre-feet will be consumed, leaving 17.5 acre-feet of snow on the hill above that which falls naturally. At the end of the snowmaking period, the on-hill storage will be depleted. Water will continue to be pumped from Bennett Springs from January 1 through April 15 to refill the reservoirs and minimize capture of snowmelt by the reservoirs. No pumping to storage will occur from April 15 through October 15 unless water is available to fully supply all downstream irrigation rights with earlier priority dates.

The artificial snowpack will melt along with the natural snow and augment spring runoff. The attached calculations show that the net effect on surface runoff will be an increase of 13.1 acre-feet.

There will be early- and late-season overlap of the Bennett Spring pumping period with the recognized irrigation season in the Marsh Creek area, and hence a potential for conflict exists. Decreed rights from Howell Creek typically have priority dates of 1880 or earlier. This conflict will be resolved in the same manner as on all decreed streams in

Idaho: by the watermaster applying the priority-date system of administration. Any time a decreed right (or any non-subordinated right with a priority date earlier than the Pomerelle right) cannot be fully delivered, and shutting off the Pomerelle right will bring relief, the watermaster will be authorized to do so. In no case will a 2001 priority date water right trump an 1880 decree.

The water balance analysis indicates that the irrigators on Howell Creek will not be impacted and in fact there will be an augmentation of surface runoff. However, there will still be consumptive use from the reservoir surface and sublimation from the artificial snow in the amount of 8.3 acre-feet. This consumptive use needs to be mitigated to satisfy IDWR's typical requirement that there be no new consumptive use, even if the timing of the consumptive use is favorable to other water users. 8.3 acre-feet per year is equivalent to 2.8 acres of irrigation, using IDWR's standard 3.0 ac-ft/acre consumptive use allowance. It is proposed to reduce irrigation by 2.8 acres under water right 45-311, a decreed right from Marsh Creek which is owned by the applicant. The water right has a 4/1/1876 priority, a very early priority on the creek. This acreage reduction will be adequate to mitigate the basin-wide consumptive use of the proposed snowmaking.

In summary, the proposed hydrologic plan, including mitigation, has the following components:

1. Pump from Bennett Springs and/or Pomerelle Spring at a maximum rate of 27 gpm generally from October 15 through April 15 (but see #5, below). Make snow from October 15 through December 31 in the amount of 19.4 acre-feet (liquid water volume).
2. Construct on-hill storage with a maximum capacity of 16.0 acre-feet.
3. Fill the storage with wintertime pumping from the springs to the maximum extent possible.
4. Line the storage reservoir(s) with a membrane liner to reduce seepage to essentially zero.
5. No water will be diverted to snowmaking storage from April 15 to October 15 unless water is available to fully supply all downstream irrigation rights with earlier priority dates.
6. Rely on the Watermaster of District 45 to administer the rights based on the priority system, as he does all other rights. Pomerelle's late-priority rights will not be allowed to trump earlier-priority non-subordinated rights when such rights cannot be filled.
7. "Basin-wide" consumptive use of the snowmaking and reservoirs will be offset by reducing irrigated acreage under 37-311 by 2.8 acres.

WATER BALANCE ANALYSIS FOR PROPOSED SNOWMAKING AT THE POMERELLE SKI AREA

Brockway Engineering 5/29/02
For 11/13/02 mitigation proposal

PROPOSED MITIGATION

- 27 gpm pumping from Bennett Springs during snowmaking period
- No spill back to creek during snowmaking (all water stored on hill)
- New earthen storage reservoir on hill, re-filled with:
 - 27 gpm pumping from Bennett Springs from 1/1 - 4/15, ending prior to spring snowmelt
 - Remainder from spring snowmelt

Snowmaking period	10/15 - 12/31
Total days in period	75
No. of days of snowmaking	55
Number of snowmaking guns	2
Output of guns	60 gpm
Operating hours / day	16 hrs/day
Volume of water required for snowmaking	19.4 acre-feet
Average daily demand of guns	115200 gpd
Average flow rate to guns	80 gpm
Average surface area of reservoir(s)	2 acres
Pond evaporation 1/1 - 12/31	38 inches (est. from NOAA data)

During snowmaking period:

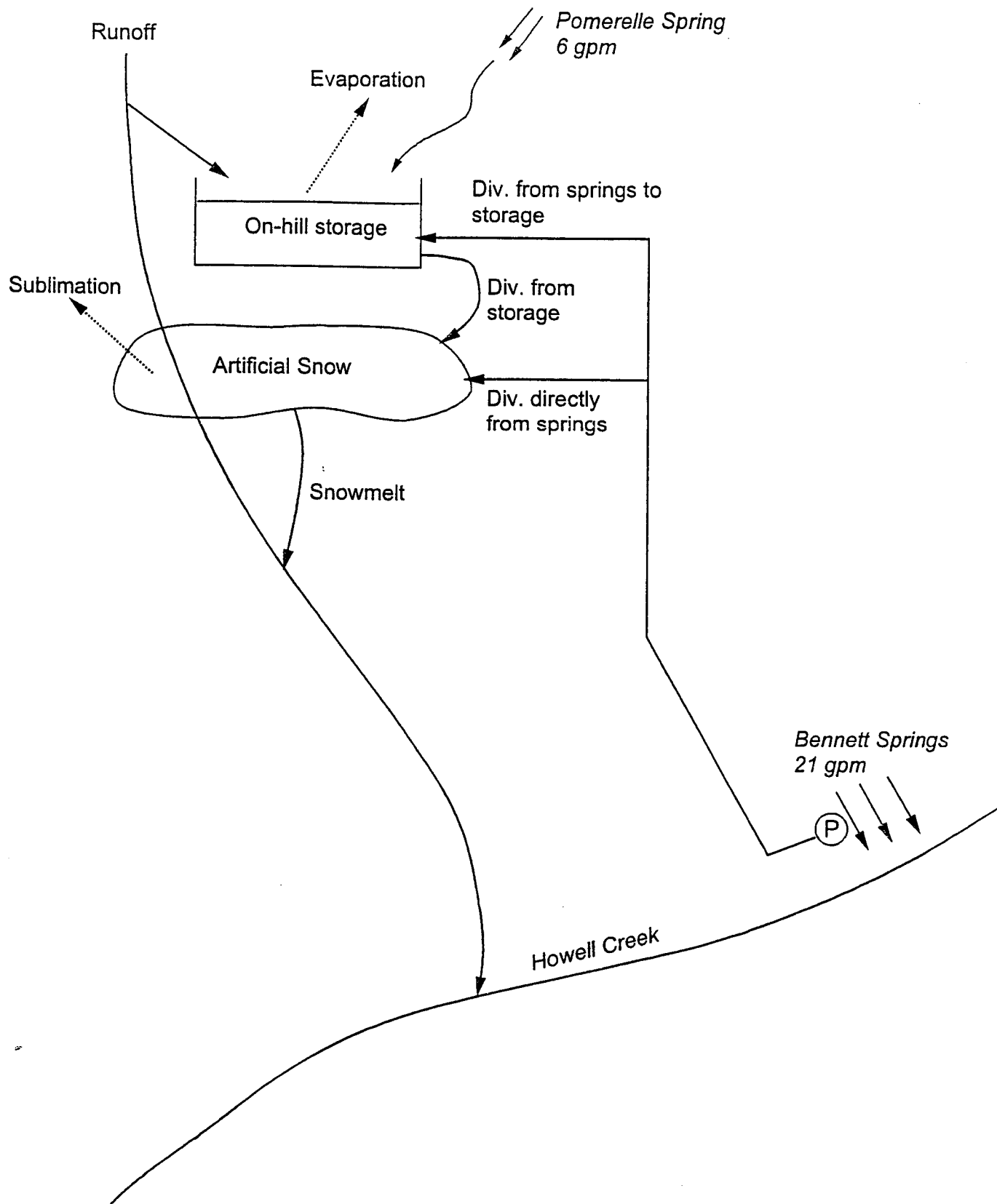
	Bennet Rd	Howell Rd	
Howell Creek average flow	2.0	2.4 cfs	
Total creek volumetric discharge	297.5	357.0 acre-feet	
Pumping rate	27	27 gpm or	0.06 cfs
Volume pumped from creek for snowmaking	8.9	8.9 acre-feet	
Percent of total discharge	3.0%	2.5%	
Estimated consumptive use percentage	10.0%		
Total annual consumptive use	1.94	ac-ft	

Howell Creek average discharge volumes:

	Bennet Rd	Howell Rd
Estimated average annual surface runoff	2050	3930 ac-ft (measured)
Estimated average base flow discharge	830	1000 ac-ft (210 days)
Estimated average annual discharge	2880	4760 ac-ft

Water balance:

Total applied to hill 10/15 - 12/31	19.45 ac-ft
Drawn from Bennett Springs during 10/15 - 12/31	8.95 ac-ft (27 gpm for 75 days)
Drawn from reservoir during 10/15 - 12/31	10.50 ac-ft
Volume pumped from springs 1/1 - 4/15 for reservoir refill	12.41 ac-ft (27 gpm for 104 days)
Lost to reservoir evaporation	6.33 ac-ft
Spring runoff stored	4.42 ac-ft (res draw + evap - refill from springs)
Lost to consumptive use - snowmaking	1.94 ac-ft
Volume which melts and contributes to runoff	17.50 ac-ft (water stored on hill - consumptive loss)
NET EFFECT ON SPRING / SUMMER RUNOFF	13.08 ac-ft
NET EFFECT ON CREEK FROM 10/15 TO 12/31	-8.95 ac-ft
NET EFFECT ON CREEK FROM 1/1 TO 4/15	-12.41 ac-ft
TOTAL CONSUMPTIVE USE	-8.28 ac-ft



POMERELLE WATER BALANCE SCHEMATIC FOR MITIGATION PROPSAL