

NEW STORAGE ON SNAKE RIVER FOR IRRIGATION USE ABOVE MILNER, IDAHO

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With Palisades reservoir in operation there will be many years when the available water supply on Snake River above Milner will be fully utilized by storage in the then existing reservoirs under their established priority rights. Surplus water spilling to waste in past years is shown by the record of flow at the Milner gaging station on Snake River as follows:

Water Spilled to Waste Past Milner and Reservoir Holdovers on Snake River Since Construction of American Falls Reservoir

<u>Year</u>	<u>Spill past Milner</u> <u>Acre-feet*</u>	<u>Reservoir holdovers</u> <u>at end of season</u> <u>(acre-feet)</u>
1927	1,600,000	2,059,500
1928	3,830,000	1,706,300
1929	1,900,000	1,260,200
1930	1,120,000	899,980
1931	350,000	65,680
1932	0	697,080
1933	0	539,350
1934	0	49,200
1935	0	183,000
1936	620,000	1,015,300
1937	382,000	696,140
1938	1,300,000	1,188,010
1939	900,000	743,890
1940	85,000	483,900
1941	3,000	651,060
1942	499,000	940,580
1943	2,680,000	1,765,100
1944	1,700,000	1,027,260
1945	988,000	1,718,680
1946	2,520,000	1,331,750
1947	1,700,000	1,390,050
1948	2,010,000	1,086,190
1949	1,630,000	996,530
1950	2,559,000	1,758,140
1951	3,130,000	1,907,710
1952	3,530,000	1,094,070
1953	1,156,000	921,900
1954	770,000	1,157,400
Average 28 years	1,320,000	1,050,000

* In excess of Idaho Power Co. water.

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With Palisades reservoir in operation and new lands irrigated, as at present contemplated, the historic spills past Milner would be reduced by several hundred thousand acre-feet or more annually with periods as long as eight years, from 1931-38 inclusive, when little or no spill at all would occur.

To create a dependable year to year water supply for irrigation use by diversion from the river for any considerable area of new lands above Milner beyond the presently authorized Michaud and Minidoka North Side pumping projects will require the construction of new reservoirs having large enough capacity to hold over water for from 8 to 12 years.

Considering substantial evaporation losses on long time holdovers and the possibility of future dry years that may be even more severe than those that have occurred during the past historic period, it appears doubtful if the construction of additional storage reservoirs would be justified for irrigation from surface streamflow of any substantial acreage of new lands above Milner.

A more feasible market for such additional storage may be found as supplemental dry year insurance water for existing projects and for purchase by individuals who are pumping from groundwaters tributary to the river above Milner, to be exchanged in dry years with Snake River surface-flow users to replace depletion in the Snake River flow caused by the pumping operations.

Due to the fact that applicants for storage space in Palisades reservoir were cut 21.5% from their approved requests for space, a provision was incorporated in the Palisades repayment contracts to the effect that if the Government constructed new storage reservoirs on Snake River above Milner the Palisades storage space contractors would be first entitled to purchase storage space in such new reservoirs in an amount not exceeding 300,000 acre-feet which would be deemed to be of the same priority right as the Palisades storage right insofar as the Government and the contractors were concerned. Additional applications from numerous individuals for upwards of 100,000 acre-feet of new storage are also on file in the Watermaster's office.

Many irrigation pumping wells have been installed during recent years in the Snake River valley upstream from Milner. Some of these are in areas where the groundwater is tributary to the river above that point, others are so located that the pumped water would otherwise enter the river below Milner. The boundary line between areas of tributary and non-tributary groundwater inflow above Milner is not at present accurately defined at all points. Inevitably further development will lead to controversy between ground-water and surface-water users unless development is orderly and coordinated with due regard to the respective rights of the several parties.

The adverse effect on existing surface-water rights by the ground-water pumping operations may be compensated for in two ways: 1: by allowing such ground-water users, who are in areas of tributary groundwater inflow above Milner, to acquire storage rights in new surface reservoirs. The water yielded therefrom could be delivered to earlier priority surface-flow rights on Snake River in exchange for the depletion in usable flow of Snake River (or its tributaries) resulting from the groundwater pumping operations;

2: by underground storage on the Snake River plains of surplus floodwaters, at such points as will feed the underground flow in areas of heavy pumping operations.

It appears quite certain that any additional storage in surface reservoirs that is feasible on the upper Snake River above Milner can readily be utilized by the present Snake River waterusers and the operators of groundwater pumping plants in areas where the groundwater is tributary to Snake River above Milner, provided that it can be made available at a reasonable price on the basis of average annual yield.

Palisades space is costing the waterusers \$9.00 per acre-foot of space and they have generally purchased such space on the basis of 3 acre-feet of space for each acre-foot of average annual yield. Thus the space is costing them \$27 per acre-foot of annual yield, with 40 years to repay without interest under the National Reclamation Laws. This appears to be a fair price and about what the irrigators could afford to repay. On this basis a new reservoir, for example, where 10 acre-feet of space might be required per acre-foot of dependable annual yield could expect the irrigators to repay \$2.70 per acre-foot of space. Some loss of water will occur at times due to flood control operations and on account of the low dependable average annual yield it is not likely that Idaho irrigation interests could afford to pay over about 10 to 15% of the cost of any new reservoirs on the Snake or its tributaries above Milner. Irrigation is paying about 20% of the cost of Palisades reservoir, exclusive of power features, but any new reservoir would yield substantially less dependable annual water supply than Palisades, expressed as a percentage of reservoir capacity.

If such reservoirs are built their cost will have to be met principally from power revenues and flood control justification. Any irrigation repayments would be made under the terms of the Reclamation Laws and studies of the irrigation yield of any new reservoirs should be made by the Bureau of Reclamation on account of its long experience in such matters. It would appear that any new reservoirs having a direct tie-in with Palisades such as a reservoir in the Snake River canyon above Palisades and a re-regulating reservoir below Palisades could most advantageously be built and operated by the Bureau of Reclamation. Reservoirs designed principally for flood control, with but slight yield of irrigation water, could be constructed and operated by the Corps of Engineers, under agreements for the irrigation use, if any, of such reservoirs, designed to protect the rights of prior water appropriators and contractors for reservoir space, and to permit the most beneficial use of any stored water.

The most logical procedure would then appear to be to first determine what new surface reservoirs, if any, might be feasible on the upper Snake or tributaries above Milner under the justification rules set up by the Bureau of the Budget. Studies could then be made of the feasibility of diverting any remaining surplus flows of Snake River, Henrys Fork, and Teton River to the Snake River plains for underground storage, thereby stabilizing insofar as possible the flow of Snake River below Milner, and offsetting to some extent, at least, the draft by groundwater pumping on the Plains.

Owing to the slow rate of travel of underground water, the groundwater basin beneath the Snake River Plains is a great underground equalizing reservoir with a fairly uniform rate of discharge and no evaporation losses. Principal beneficiaries of such underground storage would be the power plants on Snake River below Milner, operators of groundwater pumping plants on the Plains, waterusers in the Mud Lake region, and the National Reactor testing station of the Atomic Energy Commission, provided a portion of the surplus flood waters was diverted to the Mud Lake basin and area immediately west thereof.

Testimony presented to the Federal Power Commission at the recent Hells Canyon hearings in Washington, D. C., indicated that about 1,300,000 acres of new land might be expected to be irrigated by the year 2010 on Snake River and its tributaries above Hells Canyon. Over 85% of this area, however, is situated so that it would be irrigated by water now entering Snake River below Milner.