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STATE OF NEVADA
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WATER RESOURCES BULLETIN No. 8

GROUND WATER IN WHITE RIVER
VALLEY, WHITE PINE, NYE, AND
LINCOLN COUNTIES, NEVADA

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data from studies made near Chino, California, by Blaney, Taylor, and Young.¹⁰

It is believed that most phreatophytes discharge only small, probably negligible amounts of water from the ground-water reservoir where the water table is more than 15 feet below the surface. Salt grass, the most common phreatophyte in the area of transpiration apparently does not grow where the water table is more than 10 feet below the land surface and grows densely only where the water table is within 6 feet of the surface. In White River Valley few other phreatophytes grow even where the water table is within 15 feet of the land surface, and it is believed that they discharge very little water. Therefore, allowing for the distribution of phreatophytes and on the basis described in the preceding paragraph, it is estimated that the annual rate of evapo-transpiration is 0.8 foot in the area of transpiration in White River Valley. This estimate includes allowances for plant density, depth to the water table, and evaporation from small tracts of free-water surfaces.

The transpiration area (see pl. 1) comprises about 36,000 acres lying between the banks of White River channel and extending south from Lund to the south end of the valley. The area of irrigated land on which alfalfa, cereals, and meadow hay are grown is about 4,000 acres. Most of this land is in the vicinity of Preston and Lund and only small tracts lie in other parts of the valley (see pl. 1).

The estimated total annual discharge by evapo-transpiration is given below:

	Annual rate of discharge (feet)	Area (acres)	Annual discharge (acre-feet)
Native phreatophytes	0.8	36,000	28,800
Cultivated plants	1.25	4,000	5,000
Total discharge (approximate)			34,000

The quantity of water discharged by stream flow from the south end of White River Valley was estimated in February 1948 to be about 3 second-feet. Observations made during 1947 and 1948 indicate that the discharge might average 3 second-feet during the 6 months of the year when there is little irrigation in the valley. Possibly 1.5 second-feet flows during the early

¹⁰Blaney, H. F., Taylor, C. A., and Young, A. A., Rainfall penetration and presumptive use of water in Santa Ana River Valley and coastal plains: California Dept. Public Works, Water Resources Div. Bull. 33, pp. 85, 86, 1380.

spring and fall, and no water is discharged by the stream during the 3 summer months. From these data it is estimated that the average annual discharge by streams from White River Valley into White River Wash is about 1,500 acre-feet.

Ground water is also discharged from the south end of the valley as underflow in White River Wash. It is possible to estimate this discharge by subtracting from the total recharge to White River Valley the combined discharge by evaporation and stream flow. The total recharge, assuming that the Jakes Valley drainage basin is tributary to White River Valley, is estimated to be 53,000 acre-feet, and discharge by evapo-transpiration and streams totals about 35,500 acre-feet. On this basis it is estimated that as much as 17,500 acre-feet of water leaves the valley as underflow. Of course, all errors in other factors are thrown into this figure.

Evaluation of ground-water discharge by underflow at the south end of White River Valley cannot be made by other methods because the thickness and permeability of the water-bearing materials in that area are unknown.

Hot Creek Spring annually discharges 11,000 acre-feet of water. Of this amount about 4,000 acre-feet may be accounted for by evapo-transpiration losses between the spring orifice and the south end of the valley. It is recognized that not all of this 4,000 acre-feet loss is supplied by Hot Creek Spring, as there is substantial underflow from White River and the springs to the north. Also, about 700 acre-feet of water from Hot Creek Spring probably is discharged from the valley as stream flow. According to these figures not less than 6,300 acre-feet of water from Hot Creek Spring alone must leave the valley as underflow. Consequently, the estimate of 17,500 acre-feet for the entire underflow out of the valley is believed not to be unreasonable.

The estimated total annual discharge of ground water from White River Valley is summarized below:

Process	Acre-feet
Evapo-transpiration	34,000
Underflow from south end of valley	17,500
Stream flow from south end of valley	1,500
Total discharge	53,000

UTILIZATION

Present — The principal use of the ground-water discharge from wells and springs is for irrigation in the vicinity of Lund