

**IN THE OFFICE OF THE STATE ENGINEER
OF THE STATE OF NEVADA**

ORDER

#1333

**ESTABLISHING THE PERENNIAL YIELD FOR THE COLD SPRING VALLEY
HYDROGRAPHIC BASIN (100) WITHIN WASHOE COUNTY, NEVADA, AND
RESCINDING INTERIM ORDER 1307.**

I. AUTHORITY AND NECESSITY

WHEREAS, the State Engineer is designated by the Nevada Legislature to perform the duties related to the management of the water resources belonging to the people of the state of Nevada.¹

WHEREAS, the State Engineer is empowered to make such reasonable rules and regulations as may be necessary for the proper and orderly execution of the powers conferred by law.²

WHEREAS, for each administratively delineated hydrographic basin located in whole or in part in the State, the State Engineer shall prepare a water budget and calculate and maintain an inventory of water, which includes an estimate of the amount of all groundwater that is available for appropriation in the basin.³

WHEREAS, the State Engineer is encouraged to consider the best available science in rendering decisions concerning the availability of surface and underground sources of water in Nevada.⁴

WHEREAS, the State Engineer finds that he has a duty to apply the best available science to inform decisions and to ensure the best management practices are applied so as to prevent avoidable problems associated with over-appropriation and overuse of the waters of the State, regardless of the source. This duty extends to actions and decisions in the Cold Spring Valley

¹ NRS 232.100(2); NRS Title 48.

² NRS 532.120.

³ NRS 532.167(3).

⁴ NRS 533.024(1)(c).

Hydrographic Basin required to fulfill the State Engineer's statutory responsibilities to support current and future uses of water for innumerable years to come.

WHEREAS, the State Engineer previously estimated the perennial yield of the Cold Spring Valley to be 500 acre-feet, based on the 1967 investigation by Rush and Glancy, and supported by the 1981 investigation by Van Denburgh.⁵ The sum of all permitted, certificated and decreed groundwater rights is about 2,069 afa.⁶ Domestic wells that are exempt from the permitting process represent an additional commitment of 350 afa.⁷

WHEREAS, the State Engineer has the authority to hold a hearing to take evidence and hear testimony on the interpretation of the evidence with respect to his responsibility to manage Nevada's water resources.⁸

WHEREAS, Interim Order 1307, issued December 20, 2019, established a temporary moratorium on the review of, and action on, submissions concerning development and construction in the Cold Spring Valley while investigating water availability.⁹ Interim Order 1307

⁵ NSE Ex. 45, F. Eugene Rush and Patrick A. Glancy, *Water-Resources Appraisal of the Warm Springs-Lemmon Valley Area, Washoe County, Nevada* (Rush and Glancy), Water Resources—Reconnaissance Series Report 43, (Department of Conservation and Natural Resources, Division of Water Resources and U.S. Department of the Interior, Geological Survey), 1967; NSE Ex. 46, A. S. Van Denburgh, *Water Resources of Cold Spring Valley, A Growing Urban Area Northwest of Reno, NV* (Van Denburgh), USGS Open-File Report 80-1287, (U.S. Department of the Interior, U.S. Geological Survey and Department of Conservation and Natural Resources, Division of Water Resources and), 1981, both exhibits to the Hearing on Interim Order 1307, official records in the Division of Water Resources.

⁶ Corrected Findings of Fact, Conclusions of Law, Judgment, and Decree, *In the Matter of the Determination of the Relative Rights In and To all Waters of Cold Spring Valley, Hydrographic Basin No. 07-100, Washoe County, Nevada*, Case No. CV21-01532, Second Judicial District Court of Nevada, In and For the County of Washoe (November 21, 2022), ("the Cold Spring Valley Decree"); Nevada Division of Water Resources' Water Rights Database, Hydrographic Basin Summary, Cold Spring Valley Hydrographic Basin (100), accessed January 7, 2023, official records in the Division of Water Resources, available at <http://water.nv.gov/undergroundactive.aspx> (not updated to reflect the rights set forth in the Cold Spring Valley Decree). See also NSE Ex. 3, Hydrographic Area Summary, Hearing on Interim Order 1307, official records in the Division of Water Resources. NSE Ex. 3 predates the Cold Spring Valley Decree.

⁷ *Id.*, NRS 534.080(4); NRS 534.180.

⁸ NRS 532.110.

⁹ See NSE Ex. 9, State Engineer's Interim Order 1307, dated December 20, 2019, Hearing on Interim Order 1307, official records in the Division of Water Resources.

invited stakeholders with interests in water rights development within Cold Spring Valley Hydrographic Basin to file a report with the Office of the State Engineer addressing three specific matters: 1) the perennial yield of the Cold Spring Valley, defined as the quantity of groundwater that may be withdrawn from the basin each year over the long-term without depleting the groundwater reservoir; 2) whether the quantity of groundwater that may be withdrawn each year over the long-term is sufficient to meet the needs of the current commitments within the Basin; and, 3) whether the location of groundwater withdrawals and recharge within the Basin impact the quantity of water that may be sustainably developed within the Basin.¹⁰ Reports in response to the Interim Order 1307 solicitation were filed by Heinz Holdco, LLC (Heinz) and by Michael DeMartini, P.E. on behalf of Renate DeMartini, Matthew DeMartini, and himself (collectively, the DeMartini family).¹¹

WHEREAS, a public hearing was held on May 28, 2020, via video and teleconference. The purposes of this hearing were to afford stakeholder participants who submitted reports pursuant to the solicitation in Interim Order 1307 an opportunity to present the salient conclusions of their reports and to direct the State Engineer to the evidence that supports those conclusions for the purpose of making decisions regarding the future management of the Cold Spring Valley basin.¹² Following the conclusion of the hearing, the State Engineer accepted public comment until June 29, 2020.¹³

WHEREAS, during the Interim Order 1307 hearing, testimony was provided by witnesses for Heinz and by the DeMartini family. On behalf of Heinz, Justin Huntington provided testimony on his report and technical memorandum seeking to review and reassess water resources of the Cold Spring Valley.¹⁴ His work focused on assessing the components of perennial yield and system

¹⁰ *Id.*, pp. 6-7.

¹¹ Some reports and data were provided by Heinz Holdco, LLC at the hearing on the proposed Interim Order 1307, held on September 11, 2019. The exhibits are contained within the official records in the Division of Water Resources.

¹² *Notice of Hearing Procedures Regarding Order 1307*, dated May 22, 2020, Hearing on Interim Order 1307, official records in the Division of Water Resources.

¹³ The State Engineer received no public comment.

¹⁴ Heinz Ex. 16, Water Resource Assessment for the Cold Spring Valley Hydrographic Area, Northwestern Nevada, by Justin Huntington, PhD, dated March 2020; Heinz Ex. 17, Technical Memorandum 03-2020, "Estimating the maximum sustainable rate of groundwater pumping

yield using new methods and statistical models. Also on behalf of Heinz, John Rupp provided testimony regarding Cold Spring Groundwater Contour Maps that he prepared and the model he used to generate the maps and their updates.¹⁵ Finally, on behalf of Heinz, Garrett Frey and Mike Hardy testified regarding the geology and hydrogeology of the Heinz Ranch property that gave rise to the assumptions regarding hydraulic conductivity and storage used in the Groundwater Contour Maps.¹⁶ On behalf of the DeMartini family, Michael DeMartini testified regarding the potential water availability from water that collects in White Lake and detention basins in Cold Spring Valley.¹⁷

WHEREAS, the State Engineer has reviewed and evaluated the already existing body of research, in addition to the evidence and testimony provided by the participants as it pertained to the understanding of the perennial yield in Cold Spring Valley and the calculation of water available for appropriation. The result of that technical review and analysis is documented in the "Evaluation of Best Estimates of Water Budget Components and Review of Hearing Questions for the Cold Spring Valley Hydrographic Basin (HA 100)."¹⁸

considering water reuse and importation, by Justin Huntington, dated March 25, 2020; Heinz Ex. 21, C.V. for Justin Huntington; Heinz Ex. 24, demonstrative exhibit, slides to accompany presentation by Justin Huntington, PhD, all Hearing on Interim Order 1307, official records in the Division of Water Resources.

¹⁵ Heinz Ex. 15, Cold Spring Groundwater Contour Maps, dated "Aug 18"; Heinz Ex. 22, C.V. for John Rupp; Heinz Ex. 25, demonstrative exhibit, slides to accompany presentation by John Rupp, all Hearing on Interim Order 1307, official records in the Division of Water Resources.

¹⁶ Heinz Ex. 15; Heinz Ex. 19, C.V. of Michael Hardy; Heinz Ex. 23, C.V. of Garrett Frey; Heinz Ex. 26, demonstrative exhibit, slides to accompany presentation by Michael Hardy and Garret Frey, all Hearing on Interim Order 1307, official records in the Division of Water Resources.

¹⁷ DeMartini Ex. 5, C.V. of Michael DeMartini, attached to Evidentiary Disclosure, dated May 26, 2020; DeMartini Ex. 6, Report in Response to Order 1307 Regarding a Temporary Moratorium in Cold Spring Valley Hydrographic Basin (100), Washoe County, Nevada, dated March 31, 2020, both Hearing on Interim Order 1307, official records in the Division of Water Resources.

¹⁸ "Evaluation of Best Estimates of Water Budget Components and Review of Hearing Questions for the Cold Spring Valley Hydrographic Basin (HA 100)," dated January 24, 2023, Hearing on Interim Order 1307, available in the official records in the Division of Water Resources ("Technical Memorandum").

II. CALCULATION OF WATER BUDGET

WHEREAS, the State Engineer must determine the water budget of a groundwater basin or an interconnected source of water to support decisions regarding the amount of groundwater available for withdrawal.¹⁹ Water budgets are comprised of two main components, inflows and outflows. Natural groundwater inflow components can include recharge directly from precipitation, recharge indirectly from downward percolation of surface water runoff and subsurface inflow. Natural groundwater outflow components can include discharge from evapotranspiration (ET); discharge to surface water features including springs, streams, or lakes; and subsurface outflow.²⁰ These water budget components are used to account for the rates or amounts of water that move into and out of a saturated system. In a natural system, where climatic conditions are reasonably stable, the long-term mean annual recharge and discharge of an aquifer are equal.²¹ However, recharge and discharge estimates can be made independently using different methods and often do not match. Discharge is generally a more reliable measure of the groundwater budget than recharge because discharge can commonly be observed and measured where it occurs.

WHEREAS, the State Engineer has reviewed the ranges of estimates for each component of the water budget, and based on considerations of the best available science, level of uncertainty, and methodology used to make the estimate, the State Engineer finds that 1,515 acre-feet annually is the most appropriate estimate of groundwater discharge from Cold Spring Valley.²² This is derived from the average of two viable estimates of pre-development ET (1,510 acre-feet per year and 1,920 acre-feet per year) which is 1,715 acre-feet per year, minus ET in uplands areas (140 acre-feet per year) and ET from surface water irrigated areas (60 acre-feet per year) which totals 1,515 acre-feet per year.

¹⁹ See, e.g., NRS 533.024(1)(e).

²⁰ See, Technical Memorandum, p. 4.

²¹ Office of the State Engineer, *Water for Nevada, State of Nevada Water Planning Report No. 3*, p. 12, Oct. 1971.

²² Technical Memorandum, pp. 11-13.

III. PERENNIAL YIELD

WHEREAS, the perennial yield of a groundwater reservoir may be defined as the maximum amount of groundwater that can be withdrawn each year over the long term without depleting the groundwater reservoir. Perennial yield is ultimately limited to the maximum amount of natural discharge that can be utilized for beneficial use. The perennial yield cannot be more than the natural recharge to a groundwater basin and in some cases is less. The perennial yield is a single value that represents the groundwater budget for the general purpose of determining long-term water availability and whether new appropriations may be granted in accordance with NRS 533.370.

WHEREAS, the State Engineer finds that based on the consideration of testimony and evidence regarding the accuracy and precision of existing Cold Spring Valley water budget estimates, the Cold Spring Valley perennial yield is best determined as 1,500 acre-feet annually.

IV. SUSTAINABLE GROUNDWATER DEVELOPMENT

WHEREAS, Interim Order 1307 posed two additional questions to hearing participants that went beyond the perennial yield. First, the State Engineer asked whether the perennial yield is sufficient to meet the commitments within the basin.²³

WHEREAS, there are other measurements of available water, or "yields," such as system yield which includes both surface water and groundwater, and a term called Qmax which includes water reuse.²⁴ Both system yield, and Qmax, have been described and estimated in existing reports covering Cold Spring Valley.²⁵

WHEREAS, system yield as estimated for Cold Spring Valley relies upon surface water capture by groundwater pumping. For basins like Cold Spring Valley where runoff may only occur seasonally and some surface water sources are fully appropriated in an average year,²⁶ this approach has a high probability to cause conflict with surface water users. As a result, surface water, and especially surface water that has intermittent or unpredictable flow, is not typically

²³ NSE Ex. 9.

²⁴ Technical Memorandum, pp. 15-17, for definitions and discussion of system yield and Qmax.

²⁵ See NSE Ex. 46; Heinz Ex. 16 and 17.

²⁶ See the Cold Spring Valley Decree.

administered as available to new groundwater appropriations. For these reasons, system yield is a perilous management technique for appropriation of groundwater in Cold Spring Valley.

WHEREAS, relying upon treated wastewater infiltration, discussed as Qmax or return flow, as additional water available for appropriation is problematic to include in an administrative plan because it is not a natural source of water and can be subject to decisions and dynamics outside the purview of the State Engineer. Other mechanisms exist for beneficially reusing water consistent with the existing water rights permits and management policy without conflating this source with the naturally occurring available groundwater.

WHEREAS, the State Engineer finds that system yield and the Qmax may represent opportunities for efficient water use in distinct circumstances, but they are not replacements for the natural groundwater budget as defined by the basin-scale perennial yield in Cold Spring Valley. The State Engineer will evaluate any additional source of water that is or may become available based on the best available science and a demonstration that there is no conflict with existing rights.

V. SPATIAL LIMITATIONS ON GROUNDWATER DEVELOPMENT

WHEREAS, the second additional question posed by Interim Order 1307 concerned whether the location of groundwater pumping and recharge within the basin affected available groundwater.²⁷ The degree to which unreasonable lowering of the aquifer's water levels can be prevented depends not only on perennial yield, but also on the location of groundwater pumping, locations of recharge and natural discharge, and aquifer properties.²⁸

WHEREAS, the evidence presented on this question by the hearing participants was inconclusive.²⁹ The location of groundwater pumping and recharge may play a role in how efficiently water can be developed and the effects of that pumping on the surrounding aquifer, however these relationships are not sufficiently defined in Cold Spring Valley to assert a new regional management scheme. The State Engineer will continue to consider local conditions as part of the water rights application process.

²⁷ NSE Ex. 9.

²⁸ Technical Memorandum, p. 18.

²⁹ *Id.*, pp. 18-34.


VI. ORDER

NOW THEREFORE, IT IS HEREBY ORDERED, that the perennial yield of the Cold Spring Valley Hydrographic Basin (100) is **1,500 acre-feet annually**.

Moreover, current groundwater commitments exceed the perennial yield, however the consumptive use of current pumping does not exceed the amount that can be supported for the long term in Cold Spring Valley.

Finally, the locations of pumping and recharge will continue to be considered along with other available data in the evaluation of applications before the State Engineer.

ADDITIONALLY, IT IS HEREBY ORDERED that the moratorium imposed by Interim Order 1307 is hereby **RESCINDED**.


ADAM SULLIVAN, P.E.
State Engineer

Dated at Carson City, Nevada this

24th day of January, 2023.