

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

IN THE MATTER OF APPLICATIONS)
72218, 72219, 72220 AND 72221 FILED TO)
APPROPRIATE THE UNDERGROUND)
WATERS OF THE KANE SPRINGS)
VALLEY HYDROGRAPHIC BASIN (206))
LINCOLN COUNTY, NEVADA.)

RULING

#5712

GENERAL

I.

Application 72218 was filed on February 14, 2005, by Lincoln County Water District and Vidler Water Company, Inc., to appropriate 6.0 cubic feet per second (cfs) of the underground water of the Kane Springs Valley Hydrographic Basin for municipal purposes within Coyote Spring Valley Hydrographic Basin more specifically described as portions of T.8S., R.62E., T.8S., R.63E., T.8S., R.64E., T.9S., R.61E., T.9S., R.62E., T.9S., R.63E., T.9S., R.64E., T.10S., R.61E., all of T.10S., R.62E., portions of T.10S., R.63E., T.10S., R.64E., T.11S., R.61E., all of T.11S., R.62E., portions of T.11S., R.63E., T.11S., R.64E., T.12S., R.61E., all of T.12S., R.62E., all of T.12S., R.63E., portions of T.12S., R.64E., T.12.5S., R.61E., T.12.5S., R.62E., T.13S., R.61E., all of T.13S., R.62E., portions of T.13S., R.63E., T.13S., R.64E., T.13.5S., R.63E., T.14S., R.61E., all of T.14S., R.62E., portions of T.14S., R.63E., T.15S., R.61E., T.15S., R.62E., T.15S., R.63E., T.16S., R.62E., M.D.B. & M. The proposed point of diversion is described as being located within the SW $\frac{1}{4}$ SE $\frac{1}{4}$ of Section 25, T.8S., R.65E., M.D.B.&M.¹

II.

Application 72219 was filed on February 14, 2005, by Lincoln County Water District and Vidler Water Company, Inc., to appropriate 6.0 cfs of the underground water of the Kane Springs Valley Hydrographic Basin for municipal purposes within Coyote Spring Valley Hydrographic Basin more specifically as described above. The proposed point of diversion is described as being located within the SE $\frac{1}{4}$ SW $\frac{1}{4}$ of Section 31, T.9S., R.65E., M.D.B.&M.²

¹ File No. 72218, official records of the Office of the State Engineer. Exhibit No. 2, public administrative hearing before the State Engineer, April 4-6, 2006. Hereinafter the exhibits and transcript will be referred to solely by exhibit number or transcript page.

² Exhibit No. 3.

VII.

Testimony and evidence was presented in an attempt to support a determination that significantly more water is locally recharged in the Kane Springs Valley Hydrographic Basin than previously reported. The Applicants presented Mr. Walker, who possesses a background in range management, as a witness who used plant communities as a method to estimate precipitation. However, Mr. Walker also testified that the use of plant communities as a method to calculate recharge does not exist, and his methodology for calculating recharge is not used anywhere else in the United States.³¹ The Applicants then presented Mr. Lewis for the purpose of using Mr. Walker's estimation of precipitation for the establishment of new recharge estimates in the Kane Springs Valley Hydrographic Basin.³²

Reconnaissance investigations by the U.S.G.S. estimate the combined recharge for Kane Springs Valley, Coyote Spring Valley and the Muddy River Springs Area to be 2,600 acre-feet annually.³³ Recharge for Kane Springs Valley was further delineated in 1971 and was estimated to be 500 acre-feet per year.³⁴ The methods and estimates presented by the Applicants in Exhibit Nos. 29 and 30 used four estimates of precipitation. With each of the four estimates of precipitation, ground-water recharge was then estimated using two methods: a version of the well-known Maxey-Eakin technique and a water budget method. In total, the Applicants computed eight recharge estimates ranging from 5,300 to 14,155 acre-feet per year³⁵

One method for estimating precipitation tied plant communities to precipitation and elevation, and then used elevation zones to distribute precipitation throughout the basin. The second method used a spatial distribution of vegetative zones and their respective precipitation based on a United States Department of Agriculture, Natural Resource Conservation Service technical guide for ecological site descriptions.³⁶ A third precipitation method used PRISM³⁷

³¹ Transcript, pp. 244, 264.

³² Transcript, pp. 245-246.

³³ T.E. Eakin, *Ground-water Resources – Reconnaissance Series Report 25, Ground-water Appraisal of Coyote Spring and Kane Spring Valleys and Muddy River Springs Area, Lincoln and Clark Counties, Nevada*, State of Nevada, Department of Conservation and Natural Resources, United States Department of Interior, Geologic Survey, February 1964.

³⁴ Transcript, p. 253.

³⁵ Exhibit No. 16, p. 5.

³⁶ Exhibit No. 29, pp. 6, 15-17.

³⁷ PRISM – Parameter-elevation Regressions on Independent Slopes Model and is a method of spatially distributing precipitation.

modeled precipitation.³⁸ The last precipitation estimate was based on a local altitude-precipitation method developed by the Las Vegas Valley Water District.³⁹ For each of these precipitation estimates, Mr. Lewis applied both a numerical form of the Maxey-Eakin technique and water budget approach for estimating recharge.

However, Mr. Halford, as expert witness for the Protestant National Park Service, testified that the use of the Maxey-Eakin technique in each of these cases was in error,⁴⁰ because using the Maxey-Eakin recharge coefficients with any precipitation estimates other than the Hardman precipitation map is inappropriate. The Maxey-Eakin recharge coefficients are married to the Hardman map and cannot be used otherwise.⁴¹ Mr. Halford testified that if one is going to develop a new method of estimating recharge they must have the precipitation maps for the area of interest and controls on ground-water discharge, and then they can develop new recharge coefficients based on that information.⁴²

The Applicants also used a water-budget approach with each of the precipitation estimates to arrive at an estimate of recharge. In the approach for Kane Springs Valley Hydrographic Basin, it was estimated that recharge is equal to precipitation less the sum of evapotranspiration (ET), surface runoff and spring discharge. Surface runoff and spring discharge were each estimated to average a few hundred acre-feet annually; therefore, recharge was estimated to be approximately equal to precipitation minus ET. Due to the lack of ET measurements or estimates of ET in Kane Springs Valley, the Applicants used data from a United States Geologic Survey report on evapotranspiration in Ruby Valley, over 200 miles to the north.⁴³ Their evidence provides that a report prepared by Berger in 2001 reports an estimate of ET using the Bowen-ratio method for an upland-shrub non-phreatophytic plant community of 12 inches per year where annual precipitation was estimated to be 13 to 15 inches.⁴⁴ On that basis, the Applicants assume 12 inches per year of ET for areas receiving 13 to 15 inches of precipitation in Kane Springs Valley and 13 inches per year of ET for areas receiving greater than 15 inches per year of precipitation.

³⁸ Exhibit No. 29, p. 9.

³⁹ Exhibit No. 54, public administrative hearing before the State Engineer, July 16-20, 23-27, 2001, official records in the Office of the State Engineer.

⁴⁰ Transcript, pp. 489-520.

⁴¹ Transcript, p. 493.

⁴² Transcript, p. 495.

⁴³ Exhibit No. 29, p. 13.

⁴⁴ *Ibid.*

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

IN THE MATTER OF PROTESTED)
APPLICATION 63359 FILED TO)
APPROPRIATE THE PUBLIC WATERS)
OF AN UNDERGROUND SOURCE)
WITHIN THE PAHRANAGAT VALLEY)
HYDROGRAPHIC BASIN (209),)
LINCOLN COUNTY, NEVADA.)

RULING

#5560

GENERAL

I.

Application 63359 was filed on August 27, 1997, by Hi-Desert Springs, LLC, to appropriate 2.7 cubic feet per second (cfs), not to exceed 500.00 acre-feet annually, of the underground water from the Pahranaagat Valley Hydrographic Basin for quasi-municipal purposes, i.e., a proposed Ash Springs Resort development including a casino, motel, spa, RV park, golf course, airport, museum, nature exhibits, outdoor amphitheater and other amenities. The remarks section of the application indicates that the applicant has entered into an agreement with the United States Bureau of Land Management for the purchase of public lands that make up a portion of the proposed place of use. The proposed place of use is described as being located within portions of the NE $\frac{1}{4}$ NE $\frac{1}{4}$, SE $\frac{1}{4}$ NE $\frac{1}{4}$ of Section 1, T.6S., R.60E., M.D.B.&M., and portions of the NW $\frac{1}{4}$ SW $\frac{1}{4}$, SW $\frac{1}{4}$ SW $\frac{1}{4}$ of Section 5, the SW $\frac{1}{4}$ NW $\frac{1}{4}$ NW $\frac{1}{4}$, SW $\frac{1}{4}$ NW $\frac{1}{4}$ and S $\frac{1}{2}$ of Section 6, the NW $\frac{1}{4}$ NE $\frac{1}{4}$ NW $\frac{1}{4}$, E $\frac{1}{2}$ NE $\frac{1}{4}$ NW $\frac{1}{4}$, N $\frac{1}{2}$ NE $\frac{1}{4}$ of Section 7, and portions of the NW $\frac{1}{4}$ NW $\frac{1}{4}$ of Section 8, all within T.6S., R.61E., M.D.B.&M. The proposed point of diversion is described as being located within the NW $\frac{1}{4}$ SW $\frac{1}{4}$ of Section 6, T.6S., R.61E., M.D.B.&M.¹

II.

Application 63359 was timely protested by United States Department of the Interior, National Park Service on the grounds that:

¹ File No. 63359, official records of the Office of the State Engineer.

"Thus, based on the potential hydraulic gradients, ground water probably moves from the northwest, north, and northeast toward the principal carbonate springs in Pahrnagat Valley."⁶

Present development in Pahrnagat Valley is using nearly all of the natural spring discharge of about 25,000 acre-feet per year.⁷ The ground water in the Pahrnagat Valley is stored and transmitted in the Paleozoic carbonate rocks beneath the valley fill. From this carbonate flow, Hiko, Crystal and Ash Springs issue and play a dominant role in the economy of Pahrnagat Valley.⁸ The right to use the water of Hiko, Crystal and Ash Springs was decreed by the Pahrnagat Lake Decree of October 1929, amended by the Nevada Supreme Court in *Alamo Irrigation Company, Inc. v. United States of America*, 81 Nev. 390 (1965).

The State Engineer finds the hydraulic gradient indicates that groundwater flow is southward from the northern portion of Pahrnagat Valley towards the White River Channel along which are located Ash, Crystal and Hiko Springs and Upper and Lower Pahrnagat Lake. The State Engineer finds the proximity of the point of diversion under this application to Ash Springs and the path of the White River Flow System indicates that to grant a permit under Application 63359 would interfere with existing rights and thereby threaten to prove detrimental to the public interest.

CONCLUSIONS OF LAW

I.

The State Engineer has jurisdiction over the parties and subject matter of this action and determination.⁹

⁶ *Id.* at 15.

⁷ *Id.* at 1.

⁸ Water Resources Reconnaissance Series Report No. 21, pp.13-15.

⁹ NRS chapters 533 and 534.

II.

The State Engineer is prohibited by law from granting a permit under an application to appropriate the public waters where:¹⁰

- A. there is no unappropriated water at the proposed source;
- B. the proposed use or change conflicts with existing rights;
- C. the proposed use or change conflicts with protectible interests in existing domestic wells as set forth in NRS § 533.024; or
- D. the proposed use or change threatens to prove detrimental to the public interest.

III.

The State Engineer concludes that to permit the appropriation of ground water under Application 63359 would interfere with existing water rights thereby threatening to prove detrimental to the public interest.

RULING

Application 63359 is hereby denied on the grounds that to permit the appropriation of water under the application would interfere with existing rights and threaten to prove detrimental to the public interest. No ruling is made on the merits of the protests.

Respectfully submitted,



HUGH RICCI, P.E.
State Engineer

HR/SJT/jm

Dated this 9th day of
February, 2006.

¹⁰ NRS § 533.370(4).

IN THE OFFICE OF THE STATE ENGINEER

IN THE MATTER OF APPLICATIONS 42688)
AND 43598 FILED TO APPROPRIATE THE)
PUBLIC WATERS OF AN UNDERGROUND)
SOURCE IN PAHRANAGAT VALLEY GROUND)
WATER BASIN, LINCOLN COUNTY, NEVADA.)

RULING

3225

GENERAL

Application 42688 was filed on October 20, 1980, by Duane and Alice Davis to appropriate 0.07 c.f.s. of water from an underground source for irrigation and domestic purposes on 8.4 acres of land within the E1/2 W1/2 NE1/4 Section 10, T.5S., R.60E., M.D.B.&M. The point of diversion is described as being within the SW1/4 NE1/4 Section 10, T.5S., R.60E., M.D.B.&M.¹

Application 43598 was filed on April 27, 1981, by Bryan K. and Dawn N. Hafen to appropriate 1.7 c.f.s. of water from an underground source for irrigation and domestic purposes on 80 acres of land within the SE1/4 NE1/4 Section 10 and SW1/4 NW1/4 Section 11, T.5S., R.60E., M.D.B.&M. The point of diversion is described as being within the SW1/4 NW1/4 Section 11, T.5S., R.60E., M.D.B.&M.¹

Water Resources Reconnaissance Series Report No. 21, entitled "Ground-Water Appraisal of Pahrnagat and Pahroc Valleys, Lincoln and Nye Counties, Nevada, October 1963", by Thomas E. Eakin, was prepared cooperatively by the U.S. Geological Survey and the State of Nevada, Office of the State Engineer. This report is available in the Office of the State Engineer.

FINDINGS OF FACT

I.

The location of Crystal Springs is described as being within the SE1/4 NW1/4 Section 10, T.5S., R.60E., M.D.B.&M.² Crystal Springs has existing water rights by Claim No.s 01548, 01794 and 01825 under the Ash Springs/Pahrnagat Lake Decree of October 14, 1929, in the Tenth Judicial District Court of the State of Nevada in and for the County of Lincoln, as further amended on July 15, 1965, in the Seventh Judicial District Court of the State of Nevada in and for the County of Lincoln.¹ Said decree states that Crystal Springs is fully appropriated. The State Engineer has also denied a previous application on that basis.²

¹ Public record in the office of the State Engineer.

² See Application 7663, public record in the office of the State Engineer.

II.

The proposed point of diversion under Application 42688 is more fully described as being within the SW1/4 NE1/4 Section 10, T.5S., R.60E., M.D.B.&M., or at a point from which the W1/4 corner of said Section 10 bears S. 70° 53' 04" W., a distance of 3696.45 feet.¹ This description locates said point of diversion approximately 500 feet due west from Crystal Springs.

The proposed point of diversion under Application 43598 is more fully described as being within the SW1/4 NW1/4 Section 11, T.5S., R.60E., M.D.B.&M., or at a point from which the N1/4 corner of said Section 11 bears N. 35° 40' 56" E., a distance of 2438 feet.¹ This description locates said point of diversion approximately 2400 feet due east from Crystal Springs.

III.

Ground water in the Pahrnagat Valley Basin is stored and transmitted in the Paleozoic carbonate rocks beneath the valley fill. Hiko, Crystal and Ash Springs issue from the Paleozoic carbonate rocks and play a dominate role in the economy of Pahrnagat Valley. The magnitude of the combined discharge, averaging about 35.0 c.f.s. (25,000 acre-feet annually), is far in excess of the amount that might be supplied by recharge from precipitation within the defined surficial area of the valley (estimated average 1800 acre-feet annually). This indicates that much of the ground water discharged by the springs is derived from beyond the drainage divide of the valley. The general hydraulic gradient tends to slope southward and towards the White River Channel, of which Ash, Crystal and Hiko springs are located along said course.³

That the existing fractures or solution openings have extensive hydraulic connection throughout the area, is demonstrated by the regional hydrology. Ground water movement through carbonate rocks in this region occurs through both fractures and solution openings. Solution openings developed near sources of recharge where carbon dioxide carried by rain water penetrated the rocks, or where organic and other acids derived from decaying vegetation and other sources were carried by water into contact with the carbonate rocks. The principle significance of solution openings is that they greatly facilitate movement of ground water through carbonate rocks. Certainly, the large quantity of ground water issuing from fractures and solution openings, such as those of Ash, Crystal and Hiko Springs in Pahrnagat Valley, is a dramatic demonstration that ground water moves through Paleozoic carbonate rocks in this region of Nevada.³

IV.

Chemical analysis performed on or about September 3, 1984, on water samples from both Crystal Springs and the existing domestic well covered by Application 42688 was submitted to this office on May 28, 1985, by the applicant, Duane Davis.¹ The results of the analysis indicate that the well is drawing from the same source as Crystal Springs.

³ Water Resources Reconnaissance Series Report No. 21.

CONCLUSIONS

I.

The State Engineer has jurisdiction of the parties and the subject matter of this action and determination.⁴

II.

The State Engineer is prohibited by law from granting a permit under an application to appropriate the public waters where:⁵

- A. There is no unappropriated water at the proposed source, or
- B. The proposed use conflicts with existing rights, or
- C. The proposed use threatens to prove detrimental to the public interest.


III.

Information available to the State Engineer indicates that appropriation of water from the underground well locations described under Applications 42688 and 43598 could result in the interception of source water to Crystal Springs, a fully appropriated source, and therefore conflict with existing rights.

RULING

Applications 42688 and 43598 are herewith denied on the grounds that the points of diversion are in close proximity to Crystal Springs and analysis has shown that the source of water would be the same as Crystal Springs which is fully appropriated. Any further appropriation of water would conflict with the existing rights on Crystal Springs and threaten to prove detrimental to the public welfare.

Respectfully submitted,



PETER G. MORROS
State Engineer

PGM/SHF/bl

Dated this 14th day of
August, 1985.

⁴ NRS Chapters 533 and 534.

⁵ NRS 533.370(3).

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

IN THE MATTER OF PROTESTED APPLICATION 53948)
FILED TO APPROPRIATE THE UNDERGROUND WATERS OF)
TIKAPOO VALLEY (NORTHERN PART) (169A), LINCOLN)
COUNTY, NEVADA, APPLICATIONS 53950 AND 53951)
FILED TO APPROPRIATE THE UNDERGROUND WATERS OF)
TIKAPOO VALLEY (SOUTHERN PART) (169B), LINCOLN)
COUNTY NEVADA, APPLICATIONS 54062 AND 54066)
FILED TO APPROPRIATE THE UNDERGROUND WATERS OF)
THREE LAKES VALLEY (SOUTHERN PART) (211), CLARK)
COUNTY, NEVADA, AND APPLICATIONS 54068 AND 54069)
FILED TO APPROPRIATE THE UNDERGROUND WATERS OF)
THREE LAKES VALLEY (NORTHERN PART) (168), CLARK)
COUNTY, NEVADA.)

RULING

#5465

GENERAL

I.

Application 53948 was filed on October 17, 1989, by the Las Vegas Valley Water District to appropriate 10.0 cubic feet per second of underground water from the Tikapoo Valley - Northern Part hydrographic basin for municipal and domestic purposes within Clark, Lincoln, Nye and White Pine Counties. The proposed point of diversion is described as being located within the NW $\frac{1}{4}$ NE $\frac{1}{4}$ of Section 24, T.6S., R.58E., M.D.B.&M.¹ Application 53948 was timely protested by the following persons or entities:²

U.S. Dept. of Interior, Bureau of Land Management ("BLM")
Steve Medlin
County of Inyo, California
Pahranagat Valley Joint Venture Services Board
Bertrand and Pierre V. Paris
Town of Alamo Water and Sewer Board

¹ File No. 53948, official records of the Office of the State Engineer. Exhibit No. 3, public administrative hearing March 22-26, 2004, official records in the Office of the State Engineer. Hereinafter, the transcript of the hearing and the exhibits will be referred to by transcript page number and exhibit number.

² File No. 53948, official records in the Office of the State Engineer. Exhibit Nos. 5, 6, 7, 8, 9, 10, 11, 12, 13, 14, 15, 16, 17, 18, 19.

The federal agencies also assert that the water discharged from the system is either already appropriated by the federal agencies or is connected to areas where there are concerns as to either threatened or endangered species and habitat that may be impacted if the present groundwater discharge is diminished. Further concern on the part of the federal agencies is that as water is released from storage with the initiation of pumping, it will delay the impact of said pumping and the replenishment of this storage will also delay any recovery, if and when pumping is stopped. Finally, the federal agencies are convinced that the pumping of ground water will eventually impact discharge areas since the "concept of mass balance requires that the discharge areas will be impacted . . . [h]owever, [the witness noted that] the timing and the magnitude of that impact is currently unknown."⁴⁴

"Pumping decisions made today may ultimately affect surface water resources, (river flows, lake levels, discharges to wetlands and springs, et cetera), but these effects may not be fully realized for many years. Equilibrium to pumping is reached only when withdrawal is balanced by capture and in many circumstances, long periods are necessary before even an approximate equilibrium condition can be reached."⁴⁵

In other words, the decisions made today can have impacts that may not occur for decades or hundreds of years and . . . we need to recognize that time delay occurs. . . . [and] if the decision is made that there is an impact and that impact is detrimental against what society would like to have happen it would take a long time for the system to recover. The effects of pumping continue past the time that the pumping is stopped, especially when the point that's being affected is a long distance away.

And so putting it in the Devil's Hole example, if

⁴⁴ Transcript, pp. 330-331, 394.

⁴⁵ Exhibit No. 233, Transcript, p. 277.

at some point in the future, and it may be decades or hundreds of years, if water level declines occur and a decision is made to stop the pumping, that water level decline will continue to increase before the effects of turning off the pumping start to increase the water levels.⁴⁶

The witness for the federal agencies testified that recharge does not replace the water removed from storage, but the Applicant's witness testified that transitional storage is recharge.⁴⁷ The federal witness said that the only source is the water elsewhere in storage, which will cause the lowering of water levels in the distal areas of the drawdown cone.⁴⁸ If there's not a lot of recharge going on it will lengthen the amount of time for recovery to occur.⁴⁹

The appropriations under consideration in this ruling are from groundwater basins that are considered to be within the Death Valley Regional Flow System, which terminates in the Ash Meadows and Death Valley areas. The State Engineer notes that recent information indicates that appropriations from the east side of Tikapoo Valley - Southern Part (Applications 53950 and 53951) may be in an area where the groundwater flow may trend towards Coyote Springs Valley, which is part of the White River Flow System where there is a groundwater study in place to gather more information as to the effect of the pumping proposed in that groundwater basin.⁵⁰

⁴⁶ Transcript, pp. 277-278.

⁴⁷ Transcript, pp. 278, 579.

⁴⁸ Transcript, p. 278.

⁴⁹ Transcript, pp. 278-279.

⁵⁰ State Engineer's Order No. 1169, dated March 8, 2002, official records in the Office of the State Engineer.

2,390 acre-feet annually to over 19,166 acre-feet annually for the four groundwater basins under consideration here. This is a difference of approximately 800 percent, and provides the State Engineer with a reason to show caution in accepting newly presented recharge estimates. The State Engineer finds, due to the uncertainty of the quantity of actual recharge, he has chosen to discount the Applicant's estimates of recharge for the subject basins and use the recharge estimates provided by Rush in 1970 as they are a middle ground and consistent with previous rulings made by the State Engineer.

XLV.

For a groundwater basin, which has no evapotranspiration, such as the basins under consideration here, the perennial yield has been established as one-half the volume of the basin discharge.⁶⁶ The State Engineer finds that in basins where the volume of basin discharge has been used to establish the perennial yield, said volume was not adjusted to account for any quantity of water previously appropriated in a hydrologically connected groundwater basin. If the water appropriated in an "upstream" basin is not deducted from the amount which discharges to the "downstream" basin or basins, it creates the potential for double accounting and regional over appropriation.

In determining the amount of water available for appropriation, in basins where outflow from one basin is part of the inflow to another basin, the State Engineer must take into consideration the amount of water appropriated in the "upstream" basin and discount that amount from the inflow into the "downstream" basin. Thus, the State Engineer is still able to manage the groundwater basins as they have been historically managed administratively, but also take into consideration the

⁶⁶ State Engineer's Office, Water for Nevada, State of Nevada Water Planning Report No. 3, Oct. 1971.

concerns that groundwater basins must be considered hydrologically connected.

XLVI.

For Tikapoo Valley - Northern Part, Rush⁶⁷ established the basin recharge to be 2,600 acre-feet annually, basin inflow to be zero, the basin outflow to Tikapoo Valley - Southern Part to be 2,600 acre-feet annually, and the perennial yield to be 1,300 acre-feet annually, i.e., one-half the amount of basin outflow.⁶⁸

The State Engineer finds the total quantity of water that can be appropriated from Tikapoo Valley - Northern Part is the 2,600 acre-feet annually of basin outflow, limited by a reduction for existing water rights, as indicated below, and the interbasin transfer factors that must be considered and are also addressed below.

As discussed previously, the perennial yield in basins with no evapotranspiration, as is the case with Tikapoo Valley - Northern Part, was established as one-half of the basin outflow. By allowing the appropriation of the entire 2,600 acre-feet of annual basin outflow, the State Engineer recognizes that he is not following the historical practice of only appropriating the perennial yield, that being only one-half the basin discharge. However, under pumping equilibrium conditions, the basin outflow decreases proportionally to the amount of water pumped. Therefore, the amount of water determined to be available for appropriation could be established as the amount of outflow provided the decrease in basin outflow is reduced proportionally.

A majority of the research indicates that the groundwater flow gradient (outflow) from Tikapoo Valley - Northern Part is to Tikapoo Valley - Southern Part and the records of the State Engineer's office indicate there are no existing appropriations in

⁶⁷ Exhibit Nos. 172, 177.

⁶⁸ State Engineer's Office, Water for Nevada, State of Nevada Water Planning Report No. 3, pp. 23, 48, Oct. 1971.

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

IN THE MATTER OF APPLICATIONS)
54075 AND 54076 FILED TO)
APPROPRIATE UNDERGROUND WATER)
FROM THE CALIFORNIA WASH HYDROGRAPHIC)
AREA (218), CLARK COUNTY, NEVADA)

RULING

#5115

GENERAL

I.

Application 54075 was filed on October 17, 1989, by the Las Vegas Valley Water District ("LVVWD") to appropriate 10 cubic feet per second (cfs) of the water from the "underground rock aquifer" within the California Wash Hydrographic Area for municipal and domestic purposes within Clark, Lincoln, Nye and White Pine Counties, as more specifically described and defined within NRS § 243.035-243.040 (Clark), 243.210-243.225 (Lincoln), 243.365-243.385 (White Pine) and 243.275-243.315 (Nye). The proposed point of diversion is described as being located within the NE¼ SW¼ of Section 4, T.16S., R.66E., M.D.B. & M.¹ In Item 12, the remarks section of the application, it indicates that the water sought under the application shall be placed to beneficial use within the Las Vegas Valley Water District service area as set forth in Chapter 752, Statutes of Nevada 1989, or as may be amended. Further, that the water may also be served and beneficially used by lawful users within Lincoln, Nye and White Pine Counties, and that water would be commingled with other water rights owned or served by the applicant or its designee. By letter dated March 22, 1990, the applicant further indicated, in reference to Item 12, that the approximate number of persons to be served is 800,000 in addition to the current service for approximately 618,000 persons, that the applications seek all the unappropriated water within the particular groundwater basins in the which water rights are sought and that the projected

¹ File No. 54075, official records in the Office of the State Engineer.

Large-scale development (sustained withdrawals) of water from the carbonate-rock aquifers would result in water-level declines and cause the depletion of large quantities of stored water. Ultimately, these declines would cause reductions in the flow of warm-water springs that discharge from the regional aquifers. Storage in other nearby aquifers also might be depleted, and water levels in those other aquifers could decline. In contrast, isolated smaller ground-water developments, or developments that withdraw ground water for only a shorttime, may result in water-level declines and springflow reductions of manageable or acceptable magnitude.

Confidence in predictions of the effects of development, however, is low; and it will remain low until observations of the initial hydrologic results of development are analyzed. A strategy of staging developments gradually and adequately monitoring the resulting hydrologic conditions would provide information that eventually could be used to improve confidence in the predictions.¹⁹

The committed groundwater resource in the form of permits and certificates issued by the State Engineer to appropriate underground water from the California Wash Hydrographic Basin currently exceeds 567 acre feet annually.²⁰ The State Engineer has previously granted groundwater permits, which authorize use of underground water in an area underlain by the carbonate-rock aquifer system or directly from the carbonate-rock aquifer system in the following quantities:

¹⁹ Id. at 1-2.

²⁰ Hydrographic Basin Abstract, Basin 218, official records in the Office of the State Engineer, April 9, 2002. It should be noted that only 477 acre-feet is for the permanent use of water, the other water use permitted is for environmental clean-up and mining and milling, which are considered non-permanent uses of water.

Coyote Springs Valley (Basin 210)	16,300	acre-feet
Black Mountain (Basin 215)	10,216	acre-feet
Garnet Valley (Basin 216)	3,380	acre-feet
Hidden Valley (Basin 217)	2,200	acre-feet ²¹
Muddy River Springs aka Upper Moapa Valley (Basin 219)	14,756	acre-feet
Lower Moapa Valley (Basin 220)	5,813	acre-feet
California Wash (Basin 218)	<u>477</u>	<u>acre-feet</u>
Total	50,942	acre-feet

The State Engineer finds, in a straight perennial yield analysis, that existing groundwater rights in the California Wash groundwater basin exceed the perennial yield of the groundwater basin. However, the State Engineer further finds that appropriations from the carbonate-rock aquifer are being requested, and evidence has been presented to him that new estimates of the system yield need to be established. The State Engineer finds, given the complexities of the carbonate-rock aquifer system, further site specific information (one valley at a time) is needed and will provide information not presently available due to the limited development of the resource. The State Engineer finds that due to the complexities of the system and potential interaction between the carbonate-rock aquifer and the alluvial aquifer, further analysis is required in order to understand what potential, if any, exists for the appropriation of more water from the California Wash groundwater basin.

The State Engineer finds because assurances that the adverse effects of development will not overshadow the benefits cannot be made with a high degree of confidence, development of the carbonate-rock aquifer system must be undertaken in gradual stages together with adequate monitoring in order to predict the effects

²¹ This 2,200 acre-feet is combined with 2,200 acre-feet issued in Garnet Valley for a total of 2,200 afa between the two basins.

the full quantity requested under the applications at this time, since no determination can be made that there is even unappropriated water available.

XVII.

The State Engineer concludes that by granting of these water right applications he is not sanctioning water mining; and thus, the requirement for monitoring and mitigation.

XVIII.

The State Engineer concludes that the issue of air contamination or pollution is within the authority of the Clark County Health Department.

XIX.

The State Engineer concludes that the protest issue that the applications will cause water rates to go up causing demand to go down is without merit.

XX.

The State Engineer concludes that any issues as to the Treaty of Ruby Valley are not within his jurisdiction and all water right permits are issued subject to existing rights.

RULING

The protests to Application 54075 is upheld in part and overruled in part. They are being upheld in that more information is necessary before the appropriation of large quantities of water from the groundwater basin can proceed. They are being overruled in that development of a smaller quantity of water is being permitted. Application 54076 is being held in abeyance until at least the study ordered under State Engineer's Order No. 1169 has been completed. Application 54075 is hereby granted subject to:

1. Existing rights;
2. Payment of the statutory fees;
3. A monitoring program approved by the State Engineer prior to the diversion of any water permitted under these


Ruling
Page 40

applications prepared in conjunction with the study ordered in State Engineer's Order No. 1169.

4. The total duty under Permit 54075 shall be limited to 2,500 acre-feet annually with a diversion rate of 5.0 cfs, no additional water will be granted under this application; and

5. If impacts to existing rights are demonstrated, the applicant or any assignee will be required to mitigate the same.

Respectfully submitted,


HUGH RICCIO, P.E.
State Engineer



HR/SJT/jm

Dated this 18th day of
April, 2002.

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

1169

ORDER

HOLDING IN ABEYANCE CARBONATE-ROCK AQUIFER SYSTEM GROUNDWATER APPLICATIONS PENDING OR TO BE FILED IN COYOTE SPRINGS VALLEY (BASIN 210), BLACK MOUNTAINS AREA (BASIN 215), GARNET VALLEY (BASIN 216), HIDDEN VALLEY (BASIN 217), MUDDY RIVER SPRINGS aka UPPER MOAPA VALLEY (BASIN 219), LOWER MOAPA VALLEY (BASIN 220), AND FOR FURTHER STUDY OF THE APPROPRIATION OF WATER FROM THE CARBONATE-ROCK AQUIFER SYSTEM, LINCOLN AND CLARK COUNTIES, NEVADA.

WHEREAS, the Nevada 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, the State Engineer is empowered to conduct such studies as are necessary.³

WHEREAS, a large portion of the State of Nevada consisting of approximately 50,000 square miles of sparsely populated land is underlain by significant carbonate-rock sequences.⁴

WHEREAS, the carbonate-rock sequences contain groundwater aquifers, which are believed to contain significant, but undetermined, quantities of ground water.

WHEREAS, many persons or entities have filed water right applications requesting permission to appropriate substantial quantities of underground water from the carbonate-rock aquifer system.

WHEREAS, in 1984, the Water Resources Division of the United States Department of Interior, Geological Survey proposed a 10-year investigation of the entire Carbonate Terrane, which includes the carbonate-rock aquifers of the areas referenced above. This study was proposed because the water resources of the Carbonate Terrane were not well defined, the hydrology and geology of the area are complex, and data was sparse.⁵

¹ See, Nevada Revised Statutes chapters 532, 533, 534, 535 and 536.

² NRS § 532.120.

³ NRS § 532.165(1), 533.368 and 533.370(2).

⁴ Michael D. Dettinger, Distribution of Carbonate-Rock Aquifers in Southern Nevada and the Potential for their Development, Summary of Findings, 1985-1988, Summary Report No. 1, United States Geological Survey, Department of Interior and Desert Research Institute, University of Nevada System, p. 3, 1989. See also, Memorandum dated August 3, 1984, from Terry Katzer, Nevada Office Chief, Water Resources Division, United States Department of Interior Geologic Survey, Carson City, Nevada, to Members of the Carbonate Terrane Study, Attachment p. 8, which indicates that the area underlain by significant carbonate-rock sequences in Nevada is over 40,000 square miles of sparsely populated land, and includes 106 hydrographic areas and basins.

⁵ Memorandum dated August 3, 1984, from Terry Katzer, Nevada Office Chief, Water Resources Division, United States Department of Interior Geologic Survey, Carson City, Nevada, to

areas combined is approximately 3,550 acre-feet annually. Using the modified Maxey-Eakin technique introduced at the administrative hearing (known as the Donovan-Katzer 2000 technique), the recharge is estimated at approximately 6,761 acre-feet annually for the combined areas.¹⁴

WHEREAS, testimony and evidence from the administrative hearing on the Las Vegas Valley Water District's applications indicates that approximately 50,000 acre-feet of groundwater inflow comes into the Coyote Springs Valley from northern groundwater basins and approximately 53,000 acre-feet annually outflows¹⁵ from Coyote Springs Valley of which a portion may be available for capture from that groundwater underflow. While testimony presented indicated a belief that significant quantities of water may be available for capture from storage, it is unknown what quantity that would be and if any underground water could be appropriated without unreasonable and irreversible impacts.¹⁶

WHEREAS, testimony and evidence from the administrative hearing on the Las Vegas Valley Water District's applications indicates that a portion of the ground water outflow from Coyote Springs Valley is believed to discharge at a rate of approximately 37,000 acre-feet annually at the Muddy River Springs area and approximately 16,000 to 17,000 acre-feet annually flows to groundwater basins further south.¹⁷ This 37,000 acre-feet is counted as part of the 53,000 acre-feet outflow from Coyote Springs Valley resulting in 16,000-17,000 acre-feet annual flow that bypasses the Muddy River Springs area.

WHEREAS, these referenced large springs located near the central part of the Upper Moapa Valley, which that collectively discharge approximately 37,000 acre-feet annually of underground water, are fully appropriated pursuant to the Muddy River Decree.¹⁸ It is believed that the source of water discharged originates mainly from the carbonate-rock aquifer system, but it is unknown if the discharge originates solely from the White River Flow System or is also influenced by discharge from the Meadow Valley Flow System or if there is influence from the alluvial aquifer.

WHEREAS, listed endangered and/or potential threatened species exist in the Muddy Springs/Muddy River area.

WHEREAS, testimony and evidence from the administrative hearing on the Las Vegas Valley Water District's applications indicates that their own expert witnesses are unable to make a suggestion to the State Engineer as to what part of the water budget could be captured without a great deal of uncertainty, and that the question cannot be resolved without stressing the system.¹⁹

¹⁴ See, testimony of Terry Katzer and David Donovan; Exhibit 54, p. 4-25, public administrative hearing before the State Engineer, July 16-24, 2001.

¹⁵ Taking into account for 4,000 afa of in-basin recharge and 1,000 afa of evapotranspiration.

¹⁶ See, testimony of Terry Katzer and David Donovan, public administrative hearing before the State Engineer, July 16-24, 2001.

¹⁷ See, testimony of Terry Katzer and David Donovan, public administrative hearing before the State Engineer, July 16-24, 2001.

¹⁸ Judgment and Decree, In the Matter of the Determination of the Relative Rights In and To the Waters of the Muddy River and Its Tributaries in Clark County, State of Nevada, March 12, 1920, Tenth Judicial District Court of the State of Nevada, In and For the County of Clark.

¹⁹ See, testimony of Terry Katzer and David Donovan, public administrative hearing before the State Engineer, June 16-24, 2001.

WHEREAS, testimony and evidence from the administrative hearing on the Las Vegas Valley Water District's applications indicates that the State Engineer's ability to determine if development of the carbonate-rock aquifer system will impact existing rights is dependent on how the water rights are brought "on-line" and monitored.²⁰

WHEREAS, testimony and evidence from the administrative hearing on the Las Vegas Valley Water District's applications indicates that little is known about the hydrologic connectivity between the groundwater basins, that virtually nothing is known about the mountain blocks, estimates of recharge to the area can vary by a factor of two, there is probably some connectivity between the water in the carbonate-rock aquifers and the alluvial groundwater basins,²¹ there is still little data available and not much has changed from the information known in 1984.

WHEREAS, the State Engineer has been provided several different models, which though based on little pumping data, all provide the State Engineer with different analyses, and which all indicate that the pumping of substantial amounts of carbonate-rock aquifer water will likely impact the sources of the Muddy River.

WHEREAS, the State Engineer has previously granted groundwater permits, which authorize use of underground water in the area underlain by the carbonate-rock aquifer system or directly from the carbonate-rock aquifer system in the following quantities:

Coyote Springs Valley (Basin 210)	16,300 acre-feet
Black Mountain (Basin 215)	10,216 acre-feet
Garnet Valley (Basin 216)	3,380 acre-feet
Hidden Valley (Basin 217)	2,200 acre-feet ²²
Muddy River Springs aka Upper Moapa Valley (Basin 219)	14,756 acre-feet
Lower Moapa Valley (Basin 220)	<u>5,813</u> acre-feet 50,465 acre-feet

WHEREAS, of all the water rights issued from the carbonate-rock aquifer system, to date very few have actually been pumped.

WHEREAS, if 16,000 to 17,000 acre-feet is believed to by-pass the Muddy River Springs area, the water right permits already issued in Coyote Springs Valley alone equal the estimate of the amount of carbonate flow that by-passes the region and is not part of the flow discharged from the Muddy River Springs area.

WHEREAS, Nevada Revised Statute § 533.370(2)(b) provides that the State Engineer may postpone action on an application in areas where studies of water supplies are necessary.

WHEREAS, Nevada Revised Statute § 533.368 provides that if the State Engineer determines that a hydrological study, an environmental study or any other study is necessary before he makes a final determination on an application, and the applicant, a governmental agency or other person has not conducted such a study or the required study is not available, the State Engineer shall advise the applicant of the need for the study and the type of study required.

²⁰ Ibid.

²¹ Ibid.

²² This 2,200 acre-feet is combined with 2,200 acre-feet issued in Garnet Valley for a total of 2,200 afa between the two basins.

IN THE OFFICE OF THE STATE ENGINEER

IN THE MATTER OF APPLICATION 43704)
FILED TO APPROPRIATE THE PUBLIC)
WATERS OF WHITE RIVER, WHITE PINE)
COUNTY, NEVADA.)

RULING

3640

GENERAL

I.

Application 43704 was filed on May 11, 1981, by Philip J. Carter to appropriate 8.0 c.f.s. of water from White River for Irrigation and Domestic purposes on 480 acres within the W $\frac{1}{2}$; W $\frac{1}{2}$ E $\frac{1}{2}$ of Section 23, T.10N., R.61E., M.D.B.&M. The point of diversion is described as being within the NW $\frac{1}{4}$ SE $\frac{1}{4}$ Section 11, T.10N., R.61E., M.D.B.&M.¹

II.

Application 43704 was timely protested by the Preston Irrigation Company on the following grounds:¹

"Being that White River is an unreliable flow of water, with several filings already on this stream I figure there is no additional water to be filed on."

and by Edith Reid on the following grounds:

"That it would impair and conflict with the value of existing rights; that it would be against public policy to grant said application, and contrary to statute; that the granting of said application would interfere with the customary use of Protestant's existing water rights."

and by Thomas E. Rosevear on the following grounds:

¹ Transcript of the hearing available as public record in the office of the State Engineer.

"There is not sufficient water in White Pine River to handle any new applicants, and that protestor depends solely on said waters for his ranches."

and by Lund Irrigation and Water Company on the following grounds:

"All of the White River waters are appropriated and are now in use"

III.

A hearing before the State Engineer was held in the matter of Application 43704 on February 24, 1982, at 1:00 P.M., in Ely, Nevada.¹

FINDINGS OF FACT

I.

The applicant stated that he seeks only to appropriate waste water and high water that generally occurs in the winter months.²

II.

The State Engineer has previously rejected Application 13479 filed for a similar proposal on the grounds that White River is fully appropriated.³

III.

The White River system was adjudicated in 1922 which resulted in the decreed use of 24.707 c.f.s. of water to be used on 2,986.84 acres during the summer and 4.422 c.f.s. of water to be used on 1,068 acres in the winter.⁴

² See transcript of public administrative hearing pp. 49-80.

³ See Ruling No. 405 signed by the State Engineer October 21, 1960, in file 13479, public record in the office of the State Engineer.

⁴ See final decree In the Matter of the Determination of the Relative Rights in and to the Waters of White River and its Tributaries in White Pine County, Nevada, Seventh Judicial District Court, White Pine County. Public record in the office of the State Engineer.

IV.

In addition to the decreed water rights, the State Engineer has issued permits and certificates for return flows, waste water and excess snow melt. The following is a summary of those permits in the immediate vicinity of the subject application.¹

Permit 2334	Certificate 220	2.0 cfs	200 acres	Jan 1 - July 1
Permit 2384	Certificate 444	3.29 cfs	329 acres	Apr 1 - Sept 1
Permit 11076	Certificate 3351	1.461 cfs	146.1 acres	Jan 1 - Apr 1
Permit 13043	Certificate 4451	2.282 cfs	228.2 acres	Nov 20 - Apr 1
	Certificate 4451-1	9.668 cfs	966.8 acres	Nov 20 - Apr 1

V.

There was no evidence that demonstrates that there has been any new water developed since 1960 when the Court declared White River fully appropriated.⁵

CONCLUSIONS

I.

The State Engineer has jurisdiction of the parties and the subject matter of this action.⁶

⁵ See transcript of public hearing, public record in the office of the State Engineer.

⁶ NRS Chapter 533.

II.

The State Engineer is prohibited by law from granting a permit under an application to appropriate the public waters where:⁷

- A. There is no unappropriated water at the proposed source, or
- B. The proposed use or change conflicts with existing rights, or
- C. The proposed use or change threatens to prove detrimental to the public interest.

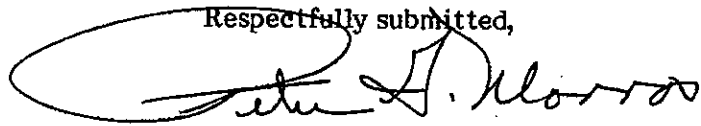
III.

The State Engineer finds that there is no unappropriated water in White River and to approve said application would interfere with existing rights.

RULING

The protests to Application No. 43704 are hereby upheld and said application is denied on the grounds set forth above.

Respectfully submitted,



PETER G. MORROS
State Engineer

PGM/RMT/bk

Dated this 26th day of
September, 1989.

⁷ NRS Chapter 533.370.