

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

IN THE MATTER OF APPLICATIONS 54055,)
54056, 54057, 54058, 54059, 63272, 63273,)
63274, 63275, 63276, 63867, 63868, 63869,)
63870, 63871, 63872, 63873, 63874, 63875 AND)
63876 FILED TO APPROPRIATE THE)
UNDERGROUND WATERS OF THE COYOTE)
SPRING VALLEY HYDROGRAPHIC BASIN)
(210), CLARK COUNTY AND LINCOLN)
COUNTY, NEVADA.)

RULING

#6254

GENERAL

I.

Applications 54055, 54056, 54057, 54058 and 54059 were filed on October 17, 1989, by the Las Vegas Valley Water District (LVVWD) to appropriate 6.0 cubic feet per second (cfs) under Applications 54055, 54056 and 54057 and 10 cfs under Applications 54058 and 54059 for a total of 27,510 acre-feet annually (afa) of groundwater from the Coyote Spring Valley Hydrographic Basin for municipal and domestic purposes. The proposed points of diversion are described as being located as follows:

Application 54055 within the SE $\frac{1}{4}$ SW $\frac{1}{4}$ of Section 5, T.13S., R.63E., M.D.B.&M.

Application 54056 within the SE $\frac{1}{4}$ SE $\frac{1}{4}$ of Section 32, T.13S., R.63E., M.D.B.&M.

Application 54057 within the SE $\frac{1}{4}$ NW $\frac{1}{4}$ of Section 16, T.14S., R.63E., M.D.B.&M.

Application 54058 within the NE $\frac{1}{4}$ NE $\frac{1}{4}$ of Section 1, T.13S., R.63E., M.D.B.&M.

Application 54059 within the NW $\frac{1}{4}$ NW $\frac{1}{4}$ of Section 19, T.13S., R.64E., M.D.B.&M.

The proposed place of use is described as being located within Clark, Lincoln, Nye and White Pine counties as more specifically described and defined in Nevada Revised Statutes (NRS) §§ 243.035-243.040 (Clark County), NRS §§ 243.210-243.225 (Lincoln County), NRS §§ 243.275-243.315 (Nye County), and NRS §§ 243.365-243.385 (White Pine County). Item 12 of the applications indicates that the water would be used within the LVVWD service

area and may also be served to users within Lincoln County, Nye County and White Pine County.¹

II.

Applications 54055, 54056, 54057, 54058 and 54059 were timely protested by many people or entities.²

Application 54055 was timely protested by the Muddy Valley Irrigation Company, U.S. Department of Interior Bureau of Land Management, Las Vegas Fly Fishing Club, City of Caliente, Moapa Band of Paiute Indians, County of White Pine and City of Ely, U.S. Department of Interior Fish and Wildlife Service, County of Nye, U.S. Department of Interior National Park Service, Unincorporated Town of Pahrump, Lincoln County Board of Commissioners, and Christopher Brown.³

Application 54056 was timely protested by the Muddy Valley Irrigation Company, U.S. Department of Interior Bureau of Land Management, Las Vegas Fly Fishing Club, City of Caliente, Moapa Band of Paiute Indians, County of White Pine and City of Ely, U.S. Department of Interior Fish and Wildlife Service, County of Nye, U.S. Department of Interior National Park Service, Unincorporated Town of Pahrump, Lincoln County Board of Commissioners, Aerojet Nevada, and Charles F. Hilfenhaus, Jr.⁴

Application 54057 was timely protested by the Muddy Valley Irrigation Company, U.S. Department of Interior Bureau of Land Management, Las Vegas Fly Fishing Club, City of Caliente, Moapa Band of Paiute Indians, County of White Pine and City of Ely, U.S. Department of Interior Fish and Wildlife Service, County of Nye, U.S. Department of Interior National Park Service, Unincorporated Town of Pahrump, Lincoln County Board of Commissioners, and Paula Engel.⁵

Application 54058 was timely protested by the Muddy Valley Irrigation Company, Las Vegas Fly Fishing Club, City of Caliente, Moapa Band of Paiute Indians, County of White Pine and City of Ely, U.S. Department of Interior Fish and Wildlife Service, County of Nye, U.S.

¹ File Nos. 54055 through 54059, official records in the Office of the State Engineer. Exhibit Nos. 2, 3, 4, 5 and 6, Public Administrative Hearing before the State Engineer, July 16-20, 23-24, August 31, 2001, official records in the Office of the State Engineer (LVVWD Hearing).

² File Nos. 54055 through 54059, official records in the office of the State Engineer and Exhibit Nos. 7, 8, 9, 10, 11, 12, 13, 14, 15, 16, 17, 18, 19, 20, 21 and 22 LVVWD Hearing.

³ The Las Vegas Fly Fishing Club and Christopher Brown did not appear or participate in the hearing.

⁴ The Las Vegas Fly Fishing Club, Aerojet Nevada, and Charles F. Hilfenhaus, Jr. did not appear or participate in the hearing.

⁵ The Las Vegas Fly Fishing Club and Paula Engel did not appear or participate in the hearing.

Department of Interior National Park Service, Unincorporated Town of Pahrump, Lincoln County Board of Commissioners, James H. Fincher, and Debra Richardson.⁶

Application 54059 was timely protested by the Muddy Valley Irrigation Company, Las Vegas Fly Fishing Club, City of Caliente, Moapa Band of Paiute Indians, County of White Pine and City of Ely, U.S. Department of Interior Fish and Wildlife Service, County of Nye, U.S. Department of Interior National Park Service, Unincorporated Town of Pahrump, Lincoln County Board of Commissioners, James H. Fincher, Ely Shoshone Tribe, and Carolyn Morrison.⁷

The protests filed by the Federal agencies U.S. Department of Interior Bureau of Land Management, Fish and Wildlife Service and National Park Service were withdrawn by stipulation with the Applicant LVVWD.⁸ The protests by the Muddy Valley Irrigation Company were withdrawn,⁹ as were the protests by the Lincoln County Board of Commissioners, and White Pine County and the City of Ely, Nye County and Unincorporated Town of Pahrump.¹⁰

III.

The protests to Applications 54055, 54056, 54057, 54058 and 54059 by the Moapa Band of Paiute Indians are summarized as follows:¹¹

1. The applications seek to extract and export water from federal lands to which the LVVWD holds no interest; therefore, the State Engineer has no authority to issue a permit.
2. There are insufficient descriptions in the applications of the proposed works of diversion, costs of such works, time required to construct said works, and number of persons to be served.
3. It would be detrimental to the public interest to approve the applications before careful consideration of the environmental and socio-economic issues they raise. The State Engineer should require an independent assessment of these issues and obtain additional information on a water resource plan for the Las Vegas Valley.

⁶ The Las Vegas Fly Fishing Club, James H. Fincher, and Debra Richardson did not appear or participate in the hearing.

⁷ The Las Vegas Fly Fishing Club, James H. Fincher, Ely Shoshone Tribe and Carolyn Morrison did not appear or participate in the hearing.

⁸ Exhibit No. 24 LVVWD Hearing.

⁹ Exhibit No. 25 LVVWD Hearing.

¹⁰ File Nos. 54055 through 54059, official records in the Office of the State Engineer.

¹¹ Exhibit No. 10 LVVWD Hearing.

4. The proposed use, in combination with the other LVVWD applications, will conflict with existing rights, including the rights of the Moapa Band of Paiute Indians to the waters of the Muddy River and to groundwater under the Moapa Indian Reservation.
5. The proposed use is unlawful and threatens to prove detrimental to the public interest because the LVVWD lacks the financial resources and rights of entry to construct the necessary works and transport the water to the intended place of use.
6. Granting applications for massive amounts of water would conflict with federal law and policy regarding use or disposition of federal lands.
7. The quantities applied for exceed the annual recharge and safe yield and will result in groundwater mining resulting in adverse impacts on the location and quantity of water resources.
8. The use of the water will affect water quality and thus impair existing uses.
9. The use of the water will degrade wetlands and riparian habitats, including those on public lands in Death Valley National Monument, Great Basin National Park, Lake Mead National Recreation Area and national wildlife refuge units.
10. The use of the water will damage wetlands, springs, seeps and phreatophytes, which provide water and habitat for migratory species, other wildlife, grazing livestock and other existing uses.
11. The use of the water will jeopardize the existence of endangered and threatened species including, but not limited to, the desert tortoise, prevent or interfere with the conservation of such species, and take or harm such species.
12. The use of the water will impair environmental, scenic and recreational values that the State holds in trust for all of its citizens.
13. The use of the water will encourage waste and discourage reasonable conservation measures within the LVVWD's service area.
14. The use of the water will lead to regional air pollution (particularly carbon monoxide and particulates) in violation of law.

IV.

The protests to Applications 54055, 54056, 54057, 54058 and 54059 by the City of Caliente are summarized as follows:¹²

¹² Exhibit No. 9 LVVWD Hearing.

1. These applications, combined with the others filed at the same time, seek a combined appropriation of 804,195 acre-feet of groundwater and the diversion and the exportation of such a quantity of water will lower the static water level in Coyote Spring Valley, adversely affect the quality of the remaining groundwater and threaten springs, seeps and phreatophytes, which provide water and habitat critical to the survival of wildlife and grazing livestock.
2. There is insufficient water to support the applications.
3. The diversion and export of the water in the applied for quantity will deprive the area of origin of water needed to protect and enhance its environment and economic well being, and destroy environmental, ecological, scenic and recreational values the State holds in trust for all its citizens.
4. It would threaten to prove detrimental to the public interest to grant the applications in absence of comprehensive planning including, but not limited to, environmental impacts, costs and socio-economic considerations, and a water resource plan.
5. The use of the water will conflict with existing rights because it will exceed the safe yield of the basin and unreasonably lower the static water level and sanction water mining. The use of water under the applications will cause a drop in the water table and degrade water quality.
6. The use of the water will threaten to prove detrimental to the public interest in that it will likely jeopardize the continued existence of endangered and threatened species, will prevent and interfere with the conservation of those species, take or harm those species, and interfere with the purposes for which federal lands are managed under federal statutes including, but not limited to, the Federal Land Use Policy Act of 1976 [sic].
7. The approval of the applications will sanction and encourage the willful waste of water that has been allowed by the LVVWD.
8. The applications should be denied because the LVVWD has not obtained the necessary legal interest in the federal lands to extract, develop and transport the water from the proposed points of diversion to the place of use.
9. The use of the water will perpetuate and increase inefficient use of water in the LVVWD service area.
10. The LVVWD lacks the financial ability to develop the resource and transport it to the intended place of use.

11. The applications are deficient in that they fail to include a description of the place of use, works of diversion, estimated cost of the works and estimated time to place the water to beneficial use.
12. The use of the water will exceed the safe yield of the basin thereby adversely affecting phreatophytes and creating air pollution in violation of State and Federal laws.
13. The applications should not be granted as the LVVWD has failed to provide information for the State Engineer to sufficiently guard the public interest. The adverse effects cannot be properly evaluated without an independent, formal and publically-reviewable assessment of the cumulative impacts of the proposed extraction, mitigation measures, alternatives to the project and implementation of water management strategies.
14. The applications should be denied because the population projections are unrealistic and ignore constraints to growth.
15. The applications should be denied because the conservation programs instituted by the LVVWD are ineffective.
16. The applications should be denied because the cost of the project will result in rate increases that will reduce demand thereby rendering the project unnecessary.
17. The applications should be denied because it will allow the LVVWD to lock-up water resources for use beyond current planning horizons.
18. The applications should be denied because current trends in housing, plumbing fixtures standards and demographic patterns all suggest that simplistic water demand forecasts overstate future need.
19. The applications should be denied because the current per capita water consumption rate for LVVWD is too high and there are most cost-effective alternatives.

V.

Applications 63272, 63273, 63274, 63275, 63276, 63867, 63868, 63869, 63870, 63871, 63872, 63873, 63874, 63875 and 63876 were filed on July 24, 1997, and February 24, 1998, by Aerojet General Corporation and assigned to Coyote Springs Investment, LLC (CSI) to appropriate 10.0 cfs, not to exceed 7,239 afa under each application of groundwater from the Coyote Spring Valley Hydrographic Basin for quasi-municipal purposes. The proposed points of diversion are described as being located as follows:

Application 63272 within the SW $\frac{1}{4}$ SW $\frac{1}{4}$ of Section 12, T.12S., R.63E., M.D.B.&M.
Application 63273 within the NW $\frac{1}{4}$ NW $\frac{1}{4}$ of Section 12, T.12S., R.63E., M.D.B.&M.
Application 63274 within the NE $\frac{1}{4}$ NW $\frac{1}{4}$ of Section 15, T.13S., R.63E., M.D.B.&M.
Application 63275 within the NE $\frac{1}{4}$ NE $\frac{1}{4}$ of Section 11, T.13S., R.63E., M.D.B.&M.
Application 63276 within the SW $\frac{1}{4}$ SE $\frac{1}{4}$ of Section 13, T.11S., R.63E., M.D.B.&M.
Application 63867 within the NW $\frac{1}{4}$ SW $\frac{1}{4}$ of Section 12, T.13S., R.63E., M.D.B.&M.
Application 63868 within the NW $\frac{1}{4}$ SW $\frac{1}{4}$ of Section 13, T.13S., R.63E., M.D.B.&M.
Application 63869 within the SW $\frac{1}{4}$ SW $\frac{1}{4}$ of Section 11, T.13S., R.63E., M.D.B.&M.
Application 63870 within the SE $\frac{1}{4}$ SE $\frac{1}{4}$ of Section 12, T.13S., R.63E., M.D.B.&M.
Application 63871 within the SE $\frac{1}{4}$ SE $\frac{1}{4}$ of Section 13, T.13S., R.63E., M.D.B.&M.
Application 63872 within the SE $\frac{1}{4}$ SW $\frac{1}{4}$ of Section 11, T.12S., R.63E., M.D.B.&M.
Application 63873 within the SW $\frac{1}{4}$ SW $\frac{1}{4}$ of Section 25, T.12S., R.63E., M.D.B.&M.
Application 63874 within the SW $\frac{1}{4}$ SW $\frac{1}{4}$ of Section 13, T.12S., R.63E., M.D.B.&M.
Application 63875 within the SW $\frac{1}{4}$ SW $\frac{1}{4}$ of Section 36, T.11S., R.63E., M.D.B.&M.
Application 63876 within the NE $\frac{1}{4}$ NE $\frac{1}{4}$ of Section 22, T.11S., R.63E., M.D.B.&M.

The proposed place of use is described as being located within the S $\frac{1}{2}$ of Section 13, Sections 20, 21, 22, 23, 24, 25, 26, 27, 28, 29, 32, 33, 34 and 35 and W $\frac{1}{2}$ of Section 36, T.11S., R.63E., M.D.B.&M.; Lots 3 and 4, S $\frac{1}{2}$ NW $\frac{1}{4}$ and SW $\frac{1}{4}$ of Section 1, Lots 1, 2, 3 and 4, S $\frac{1}{2}$ N $\frac{1}{2}$ and S $\frac{1}{2}$ of Section 2, Lots 1, 2, 3 and 4, S $\frac{1}{2}$ N $\frac{1}{2}$ and S $\frac{1}{2}$ of Section 3, Sections 8, 10 and 11, and W $\frac{1}{2}$ W $\frac{1}{2}$ of Section 12, W $\frac{1}{2}$ of Section 13, Sections 14, 17, 20, N $\frac{1}{2}$ and SE $\frac{1}{4}$ of Section 23, W $\frac{1}{2}$ of Section 24, Section 25, E $\frac{1}{2}$ of Section 26 and Section 36, T.12S., R.63E., M.D.B.&M.; Lot 1, E $\frac{1}{2}$ SW $\frac{1}{4}$ NE $\frac{1}{4}$, SE $\frac{1}{4}$ NE $\frac{1}{4}$, E $\frac{1}{2}$ W $\frac{1}{2}$ SE $\frac{1}{4}$ and E $\frac{1}{2}$ SE $\frac{1}{4}$ of Section 1 and Sections 9 and 16, T.13S., R.63E., M.D.B.&M. The remarks section of Applications 63272 through 63276 indicate that the total duty of water sought under Applications 63272 through 63276 is 36,195 afa. The remarks section of Applications 63867, 63868, 63869, 63870, 63871, 63872, 63873, 63874, 63875 and 63876 indicate that the total duty of water sought under the applications is in addition to and non-supplemental to any water sought under Applications 63272 through 63276, which equates to an additional 72,390 afa for a total duty of 108,585 afa.¹³

¹³ Exhibit Nos. 2, 3, 4, 5, 6, 7, 8, 9, 10, 11, 12, 13, 14, 15 and 16, Public Administrative Hearing before the State Engineer, August 20-24, 27-28, 2001, official records in the Office of the State Engineer (CSI Hearing).

VI.

Applications 63272, 63273, 63275, and 63276 were timely protested by the following people or entities: U.S. Department of Interior National Park Service and Nevada Power Company.¹⁴

Applications 63273 and 63274 were timely protested by the U.S. Department of Interior National Park Service.¹⁵

Applications 63867, 63868, 63869, 63870, 63871, 63872, 63873, 63874, 63875 and 63876 were timely protested by the following people or entities: U.S. Department of Interior National Park Service, Nevada Power Company, U.S. Department of Interior Bureau of Indian Affairs, U.S. Department of Interior Fish and Wildlife Service, Las Vegas Valley Water District and Moapa Valley Water District.¹⁶

Applications 63272, 63274, 63275, 63276, 63867, 63868, 63869, 63870, 63871, 63872, 63873, 63874, 63875 and 63876 were protested on various grounds summarized as follows:

1. The perennial yield of Coyote Spring Valley is about 2,000 afa from precipitation recharge. Groundwater inflow to Coyote Spring Valley is about 35,000 afa and originates from basins upgradient from the valley. Discharge from the valley is primarily by subsurface outflow (about 37,000 afa) to the Muddy River Springs Area and the Muddy River. Rights to the water in the Muddy River were decreed by the Tenth Judicial District Court of the State of Nevada. The committed resources in the area of Coyote Spring Valley and the Muddy River Springs Area nearly equal the estimated groundwater underflow in the area and recharge; thus, there is no water available for appropriation in Coyote Spring Valley or the Muddy River Springs Area.
2. Coyote Spring Valley is already over-appropriated.
3. The use of the water will impair the water rights of the United States by reducing the discharge of the Muddy River from which others hold senior water rights.
4. The use of the water will reduce the discharge of springs at Lake Mead National Recreation Area and impair water rights of the United States on those spring sources.

¹⁴ Exhibit Nos. 17, 18 and 19 CSI Hearing.

¹⁵ Exhibit No. 17 CSI Hearing.

¹⁶ Exhibit Nos. 20, 21, 22, 23, 24 and 25 CSI Hearing.

5. The use of the water will threaten to prove detrimental to the public interest in that the groundwater resources of Coyote Spring Valley will be mined and the water and water-related resources of the Lake Mead National Recreation Area will be impaired.
6. No further permits should be issued in the Coyote Spring Valley until an approved monitoring plan has been established.
7. The use of the water could impair the senior water rights of the Moapa Valley Water District in the downgradient basin (Muddy River Springs Area - Basin 219). The Moapa Valley Water District provides public water supplies from springs (Baldwin Spring Permit 28791, and Pipeline Jones Spring Permit 22739), and wells (MX well Permit 46932 and Arrow Canyon Well Permits 52520, 55450, and 58269) and use of water under the applications has the potential to impact the quantity and quality of these rights.
8. Granting the applications would not be in the public interest.
9. Model simulations suggest there may be an immediate and substantial impact on spring discharge from the proposed withdrawals with the effect especially pronounced at the Muddy River Springs. The results from the model suggest that even the current level of pumping of already permitted rights (8,600 afa permitted to Aerojet) will affect spring discharge at the Muddy River Springs.
10. The use of the water could impair the senior water rights of the U.S. Fish and Wildlife Service at the Moapa Valley National Wildlife Refuge, which is 10 to 20 miles east of the proposed points of diversion and at the Pahrangat National Wildlife Refuge, which is 20 to 30 miles north of the proposed points of diversion. The springs that emerge at these national wildlife refuges are part of the White River Flow System, which is the same source of water the Applicant CSI proposes to appropriate and Coyote Spring Valley is physically and hydrologically connected to these regional springs.
11. The use of the water may damage habitat for species that are endangered or threatened under the Endangered Species Act or other species of concern; therefore, the use of the water would threaten to prove detrimental to the public interest. This includes the endangered Moapa dace, a minnow that is endemic to the headwaters of the Muddy River system, on the Moapa Valley National Wildlife Refuge, the endangered southwest willow flycatcher and the threatened bald eagle found at the Pahrangat National Wildlife Refuge.

12. The use of the water could impact groundwater resources beneath the Moapa Indian Reservation and the surface waters of the Muddy River.
13. The use of the water will impair the rights of the U.S. National Park Service to the Muddy River and to the springs at the Lake Mead National Recreation Area.
14. The use of the water is not in the public interest because it would result in groundwater mining.
15. The use of the water is not in the public interest given the potential sale of existing water rights by the Applicant only to apply for new water rights is speculative and indicates the Applicant has no intention of applying the water to beneficial use.

VII.

By Notice of Pre-hearing Conference dated September 15, 2000, the State Engineer held a pre-hearing conference on October 25, 2000, in the matter of the above-referenced applications.

VIII.

After notice to all parties, the State Engineer held two separate hearings on the above-referenced applications. In the matter of the LVVWD Applications 54055 through 54059, the State Engineer held a public administrative hearing on July 16-20, 23-24, and August 31, 2001. In the matter of the CSI's Applications 63272, 63273, 63274, 63275, 63276, 63867, 63868, 63869, 63870, 63871, 63872, 63873, 63874, 63875, and 63876, the State Engineer held a public administrative hearing on August 20-24, 27 and 28, 2001.

FINDINGS OF FACT

I.

Order 1169 and 1169A

After the close of the above-referenced hearings, the State Engineer issued State Engineer's Order No. 1169 (Order 1169) on March 8, 2002. In that order, the State Engineer addressed what is known as the carbonate-rock aquifers, which are groundwater aquifers that exist underneath a significant portion of eastern and southern Nevada. The carbonate-rock aquifers have long been recognized as a potential water resource, but for which the water resources are not well defined, the hydrology and geology of the area are complex and data is sparse. The State Engineer noted that since 1984 it has been known that to arrive at some reasonable understanding of the carbonate-rock aquifer system, substantial amounts of money would be required to develop the science, that a significant period of study would be required,

and “unless this understanding is reached, the development of carbonate water is risky and the resultant effects may be disastrous for the developers and current users.”¹⁷

The State Engineer noted that previous studies suggested that confidence in predictions regarding the effect of development was low and would remain low until observations of the initial hydrologic results of development were analyzed. The State Engineer was concerned that the adverse effects of development would overshadow the benefits and found that the development of the carbonate-rock aquifer system must be undertaken in gradual stages together with adequate monitoring. The State Engineer noted that it is unknown what additional quantity, if any, of groundwater could be appropriated in the Coyote Spring Valley Hydrographic Basin without unreasonable and irreversible impacts. The State Engineer pointed out that the Applicants’ own experts were unable to make a suggestion as to what part of the water budget could be captured without a great deal of uncertainty and that the question could not be resolved without stressing the system.

Order 1169 noted that testimony and evidence indicated approximately 50,000 afa of underflow comes into the Coyote Spring Valley from northern groundwater basins and approximately 53,000 afa of subsurface water flows out of the Coyote Spring Valley. Of that 53,000 afa that flows out of Coyote Spring Valley, approximately 37,000 afa of water discharges at the Muddy River Springs, which is appropriated under the Muddy River Decree.¹⁸ Testimony and evidence indicated another approximately 16,000-17,000 afa is believed to flow to the groundwater basins farther south. Additionally, the State Engineer found that another 50,465 afa of groundwater was already appropriated in Coyote Spring Valley and the surrounding basins identified as Black Mountains Area, Garnet Valley, Hidden Valley, Muddy River Springs Area (a.k.a. Upper Moapa Basin) and Lower Moapa Valley Hydrographic Basins. Because very few of these groundwater rights had actually been pumped, and water rights already issued in Coyote Spring Valley alone equaled the estimate of the amount of flow that by-passes the region, the State Engineer ordered additional study before consideration of granting any additional water rights in Coyote Spring Valley.

Order 1169 ordered that all applications for new appropriations from the carbonate-rock aquifer system in Coyote Spring Valley (Basin 210), Black Mountains Area (Basin 215), Garnet

¹⁷ State Engineer’s Order No. 1169, dated March 8, 2002, p. 2, official records in the Office of the State Engineer.

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.

Valley (Basin 216), Hidden Valley (Basin 217), Muddy River Springs Area a.k.a. Upper Moapa Valley (Basin 219) and Lower Moapa Valley (Basin 220) would be held in abeyance until further information could be gathered by stressing the aquifer system by way of a pumping test. *See*, Attachment 1, Location Map of the Order 1169 Hydrographic Basins, Clark County and Lincoln County, Nevada. Unlike other basins in Nevada, the above listed basins were tied together in Order 1169 because it was well established that the spring discharge in the Muddy River Springs Area was produced from a distinct regional carbonate-rock aquifer that underlies and uniquely connects the basins. There is a very high hydraulic transmissivity found in most of this area of the carbonate-rock aquifer which results in a flat potentiometric surface in these basins. Changes in the potentiometric surface in any one of these basins occur in lockstep directly affecting the other basins, further demonstrating the regional nature of the aquifer across these basins.

In Order 1169, the State Engineer ordered a study under the provisions of NRS § 533.368 that required at least 50% (8,050 afa) of the water rights then currently permitted in Coyote Spring Valley be pumped for at least two consecutive years, and that data be gathered from others who currently held water rights in the Order 1169 area. At the end of the study, the study participants, which included the Las Vegas Valley Water District, Southern Nevada Water Authority, Coyote Springs Investment, LLC, Nevada Power Company, Moapa Valley Water District, Dry Lake Water Company, LLC, Republic Technologies, Inc., Chemical Lime Company, Nevada Cogeneration Associates or their successors, were required to submit reports identifying the information obtained and any impacts seen to the groundwater or surface water resources of the carbonate-rock aquifer system or alluvial system from the pumping. The State Engineer also ordered the LVVWD to update a model it had presented during the course of its case-in-chief at the LVVWD hearing with the new data. The State Engineer indicated that he would then decide whether sufficient information had been gathered to act on the pending applications. By State Engineer's Ruling No. 5115, dated April 18, 2002, the California Wash Hydrographic Basin (Basin 218) was included in Order 1169 because of its hydrologic connection.

By letter dated May 26, 2010, the Moapa Band of Paiute Indians indicated their concern that the pumping test itself was likely to impact water resources at the Muddy River Springs, which are the source of water for the Muddy River.

At a meeting of the Order 1169 study participants on June 22, 2010, each of the participants agreed that the pumping test would provide sufficient information even if the minimum 8,050 afa was not pumped. In response to that meeting, in a letter dated July 1, 2010, the State Engineer expressed his concern that it had been eight years since the pumping test was ordered, that the pumping requirements of the study had not even begun, and found that decisions regarding future appropriations in the basins subject to the order could not be deferred indefinitely. The State Engineer ordered that the test was to go forward even if the 8,050 afa minimum amount of pumping designated in Order 1169 was not pumped.

On December 21, 2012, the State Engineer issued Order 1169A, wherein he revised the requirements of Order 1169, indicating his belief that sufficient information had been obtained and declaring the pumping test completed as of December 31, 2012. Order 1169A provided the study participants the opportunity to address the information obtained from the study/pumping test, the impacts of pumping, and to opine as to the availability of additional water resources to support the pending applications. These reports were due in the Office of the State Engineer by June 28, 2013. The State Engineer finds that reports were submitted in a timely manner and that all the requirements of Order 1169 and 1169A have been satisfied.

II.

Order 1169 and 1169A Pumping Test

The Order 1169 pumping test originally required the participants to pump 8,050 afa from wells in Coyote Spring Valley for two years. As stated above, the State Engineer ordered on July 1, 2010, that the test go forward with reduced pumping. The test officially began on November 15, 2010. Water pumped from the MX-5 well was piped to the Moapa Valley Water District municipal infrastructure, and ultimately piped to Bowman Reservoir in Lower Moapa Valley. This water was released from Bowman Reservoir in an open channel to Lake Mead. Water pumped from wells operated by CSI was put to beneficial use in Coyote Spring Valley.

The pumping test officially ended on December 31, 2012, after a period of 25½ months. The total amount pumped between the CSI wells and the MX-5 well during the test period was 11,249 acre-feet, which translates to about 5,290 acre-feet per year, well short of the intended amount to be pumped in the study. There were a number of mechanical problems encountered during the test that required the MX-5 well to shut down. Even without the mechanical issues, the maximum pumping rate would not have resulted in a total pumpage from Coyote Spring Valley of 8,050 afa.

In addition to measuring pumping from wells in Coyote Spring Valley, pumpage was also measured and reported from 30 other wells in the Muddy River Springs Area, Garnet Valley, California Wash, Black Mountains Area, and Lower Meadow Valley Wash. Stream diversions from the Muddy River to the Reid Gardner power plant were reported by NV Energy. Measurements of the natural discharge of the Muddy River and of several of the Muddy River's headwater springs were collected daily. Water-level data were collected for 79 monitoring and pumping wells. Barometric data were collected at three sites; two sites in Coyote Spring Valley and one site in California Wash. The State Engineer finds the pumping test proceeded as required and all of the required data was collected and made available to each of the parties and the public.

III.

Pumping Test Reports

Order 1169A provided the study participants the opportunity to file reports and requested they address three questions: (1) what information was obtained from the study/pumping test; (2) what were the impacts of pumping under the pumping test; and (3) what is the availability of additional water resources to support the pending applications. Reports or letters were submitted by the Southern Nevada Water Authority (SNWA), the U.S. Department of Interior Bureaus of Fish and Wildlife Service, National Park Service and Land Management (DOI Bureaus), Moapa Band of Paiute Indians (MBOP), Moapa Valley Water District (MVWD), Coyote Springs Investment, LLC (CSI), Great Basin Water Network (GBWN) (who was not a party to the hearings or a protestant) and Center for Biological Diversity (CBD) (who also was not a party to the hearings or a protestant).

1. Southern Nevada Water Authority

SNWA prepared a comprehensive report that discusses water levels in monitoring wells throughout the Order 1169 basins and stream flows in the Muddy River Springs Area. As to Question 2, SNWA did not differentiate water-level decline due to pumping at the MX-5 well from other pumping in the area.

SNWA recognized that declines in spring flow occurred at Pedersen and Pederson East springs, and that the spring flows declined as a result of new pumping at the MX-5 well. Decline in flow at Warm Springs West was characterized as minimal, and it did not recognize any other surface flow reductions caused by groundwater pumping at the MX-5 well. SNWA provided figures that illustrate how groundwater levels and some spring flows are highly correlated with

climate. Figure 12 of SNWA's report clearly shows how the long-term declining trend in groundwater levels recovered after the wet winter of 2005.¹⁹ A similar correlation is noted for flows at the Warm Springs West gage, where a declining trend in spring discharge reversed after the winter of 2005.²⁰ SNWA points out that the flows of the Muddy River at Moapa did not decline during the period of the pumping test and asserts that the river flows are primarily impacted by valley fill pumping, primarily by NV Energy, and not carbonate pumping.

As to the availability of additional water for appropriation, SNWA states that:

It remains unclear if additional resource development beyond existing permitted rights could take place in Coyote Spring Valley at locations north of the Kane Spring fault in the area near CSMV-3. However, the presence of boundaries and variations in hydraulic conductivity suggest that, at a minimum, these areas may have the potential to be used for redistributing development of existing rights. Whether pending applications in Coyote Spring Valley are approved or denied, in whole or in part, they should be considered in order of priority with all other groundwater applications held in abeyance by Order 1169.²¹

2. Coyote Springs Investment, LLC

CSI submitted a letter in which they stated that they agree with the SNWA report. CSI believes water can be developed in Coyote Spring Valley north of the Kane Springs fault without impacting the Muddy River Springs and that pending applications of both CSI and SNWA should be granted in whole or part.

3. U.S. Department of Interior Bureaus

DOI Bureaus provided documentation and interpretations of the effects of the pumping test as well as predictions of the effects of various pumping scenarios. They analyzed water levels, spring and stream flows, and climate in the Order 1169 basins and some adjacent areas.

DOI Bureaus found the pumping test was sufficient to document the effects of the pumping, identify regional drawdown, predict future effects of pumping on water levels and spring flow, and to determine the availability of water pursuant to the applications. Their analyses of impacts under the test were extensive. They used SeriesSEE²² to discern and partition the effects of pumping at the MX-5 well from pumping at other locations. Their

¹⁹ Southern Nevada Water Authority, *Nevada State Engineer Order 1169 and 1169A Study Report*, pp. 23 – 25, June 2013, official records in the Office of the State Engineer.

²⁰ *Id.* at 26.

²¹ *Id.* at 57 - 58.

²² Halford, K., Garcia, C.A., Fenelon, J., and Mirus, B., 2012, *Advanced methods for modeling water-levels and estimating drawdowns with SeriesSEE, an Excel add-in*, U.S. Geological Survey Techniques and Methods 4-F4, 29 pp.

reported findings are that water-level decline due to MX-5 pumping (drawdown) encompasses 1,100 square miles and extends from northern Coyote Spring Valley through the Muddy River Springs Area, Hidden Valley, Garnet Valley, California Wash, and the northwestern part of the Black Mountains Area. Drawdown due to MX-5 pumping is estimated to be 1 to 1.6 feet in this area. They also found minor drawdown of 0.5 feet or less in the northern part of Coyote Spring Valley north of the Kane Springs Wash fault zone, in disagreement with SNWA. They found that water-level decline did not extend into Lower Moapa Valley. They estimate 80-90% of the pumped groundwater was derived from storage (hence the drawdown) and the remainder from capture of spring flow or from reductions in the flow of the Muddy River.²³

They completed an in-depth analysis of spring flows in relation to nearby carbonate water levels and found a direct correlation. Measurable flow decline at Pedersen, Plummer and Aparca units and Baldwin Spring are highly correlated with water levels in adjacent carbonate wells. If linear trends continue, spring flow can be estimated as a function of water levels in the adjacent carbonate aquifer. They argue that all pumping from carbonate aquifers will ultimately capture spring flow.

They also compared observed water level changes to water levels simulated in a groundwater flow model of the region.^{24,25} The model was updated to include pumping through 2012.²⁶ If the applications, which are the subject of this ruling, were pumped along with current water rights, they predict springs in the headwaters of the Muddy River, and the Muddy River itself above Moapa, would cease to flow in less than 200 years. The effects would occur much sooner if all of the pending applications held in abeyance pursuant to Order 1169 were granted and pumped. They report that the model under-predicts drawdown, and also would therefore under-predict flow losses in the springs. After analyzing model results and observations made from monitor wells and springs, they believe that pumping at current (Order 1169) rates of less

²³ U.S. Fish and Wildlife Service, U.S. Bureau of Land Management and U.S. National Park Service Order 1169A Report, *Test Impacts and Availability of Water Pursuant to Applications Pending Under Order 1169*, June 28, 2013, official records in the Office of the State Engineer.

²⁴ Tetra Tech, *Development of a Numerical Groundwater Flow Model of Selected Basins within the Colorado Regional Groundwater Flow System, Southeastern Nevada*, September 28, 2012. References provided along with the DOI Report, official records in the Office of the State Engineer.

²⁵ Tetra Tech, *Predictions of the Effects of Groundwater Pumping in the Colorado Regional Groundwater Flow System Southeastern Nevada*, September 28, 2012. References provided along with the DOI Report, official records in the Office of the State Engineer.

²⁶ Tetra Tech, *Comparison of Simulated and Observed Effects of Pumping from MX-5 Using Data Collected to the End of the Order 1169 Test, and Prediction of the Rates of Recovery from the Test*, June 10, 2013. References provided along with the DOI Report, official records in the Office of the State Engineer.

than one-half of existing permits, will result in both of the Pedersen springs going dry in 3 years or less.²⁷

The overall conclusions of the DOI Bureaus' report are that the effects of pumping from the MX-5 well are spread out over a 1,100 square-mile area. They suggest that five basins within that area, Coyote Spring Valley, Muddy River Springs Area, Hidden Valley, Garnet Valley, and California Wash should be managed as one hydrographic area because of their uniquely immediate hydrologic connection. Pumping within any of these five basins, with the possible exception of the northernmost part of Coyote Spring Valley, will have substantially similar effects on groundwater levels throughout the area because of the hydrologic connection, and will eventually capture water that discharges in the Muddy River Springs Area.²⁸

As to the availability of water pursuant to the pending applications, the DOI Bureaus indicated that their review of the water budget and perennial yield information for Coyote Spring Valley leads to the conclusion that there is no water available for new appropriation within the five-basin area delineated through their groundwater analyses. The five-basin area that the DOI Bureaus referenced includes Coyote Spring Valley, Muddy River Springs Area, Hidden Valley, Garnet Valley and California Wash. They assert that the water budget information and pumping test results suggest that all available water in Coyote Spring Valley is appropriated and that the basin may currently be over-appropriated. Additionally, the groundwater modeling simulation results, which examined progressively greater pumping of pending water right applications in these five basins, provide supporting evidence of the wide-ranging effects that can be expected in these five basins with increased pumping in a very short period of time.

The DOI Bureaus point out that groundwater that was withdrawn in the Coyote Spring Valley over the period of the pumping test is only one-third of the groundwater rights that already exist in the basin. The DOI Bureaus assert that the pumping test provides evidence that even this reduced volume of groundwater pumping cannot be developed long-term without adverse impacts to springs, endangered fish, Federal trust resources, and downstream senior water rights. They argue that the five-basin area uniquely behaves as one connected aquifer, and pumping in any of the basins will have similar effects on the whole. Consequently, they conclude that no additional groundwater is available for appropriation to satisfy the pending

²⁷ U.S. Fish and Wildlife Service, U.S. Bureau of Land Management and U.S. National Park Service Order 1169A Report, *Test Impacts and Availability of Water Pursuant to Applications Pending Under Order 1169*, p. 85, June 28, 2013, official records in the Office of the State Engineer.

²⁸ *Id.* at 84.

water right applications that are currently being held in abeyance for this portion of the carbonate-rock aquifer.²⁹

4. Moapa Band of Paiute Indians

MBOP provided a report that analyzed varying lines of evidence in addition to data collected during the pumping test. They analyzed water budgets, climatic effects, stream base flow identification, water demand for power generation, and water temperature-electrical conductivity and mixing models. MBOP argues that the drawdown due to MX-5 pumping was significantly less than that cited by the DOI Bureaus, and that the limit of detection of drawdown due to MX-5 pumping extended only five miles from the MX-5 well.³⁰ Nevertheless, they contend that carbonate pumping in Coyote Spring Valley and Muddy River Springs Area will have a 1:1 impact on Muddy River flows. They interpret total flux of the system in the Muddy River Springs Area as variable, ranging from about 35,000 afa to 42,000 afa, with the average being about 38,000 afa. Their average annual estimate is similar to Eakin's estimate of 36,000 afa.³¹ MBOP asserts that some of the regional water-level decline during the period of the pumping test, and much of the annual fluctuation, is attributed to changes in the water level in Lake Mead. MBOP argues that crustal loading and deformation is associated with the rising and falling Lake Mead surface, which in turn causes pore-pressure changes and pore-volume reductions in the carbonate aquifer. They argue that these crustal effects cause carbonate water levels to rise and fall in near tandem with lake levels. They assert that these conditions have resulted in the water-level decline on the MBOP reservation that others have attributed to MX-5 pumping. They also argue for the existence of a southern carbonate aquifer flow field separated from Coyote Spring Valley and the Muddy River Springs Area by a northeasterly-trending barrier. MBOP argues this southern flow field, which includes California Wash, Hidden and Garnet valleys, and portions of the Black Mountains Area, is hydrologically isolated and could be developed without impacting spring flows. They estimate that groundwater supply to the southern flow field is 15,000 to 20,000 afa.³²

²⁹ *Id.* at 5.

³⁰ Johnson and Mifflin, *Summary of Order 1169 Testing Impacts, per Order 1169A*, p. 25, June 28, 2013, official records in the Office of the State Engineer.

³¹ T.E. Eakin, *A Regional Interbasin Ground-water System in The White River Area, Southeastern Nevada*, Water Resources Bulletin No. 33, (Department of Conservation and Natural Resources, Division of Water Resources and U.S. Department of Interior, Geological Survey), p. 264, 1966.

³² Johnson and Mifflin, *Summary of Order 1169 Testing Impacts, per Order 1169A*, p. 26, June 28, 2013, official records in the Office of the State Engineer.

As to the availability of additional water resources, the MBOP asserts that the Order 1169 test results indicate that the 1989 LVVWD applications for approximately 27,000 afa should be denied. Their rationale is that these applications equal about 72% of the flux in the carbonate-rock aquifer that discharged as pre-development base flows of the Muddy River and that all the hydrogeological evidence indicates such production would reduce the flux to the discharge area by a similar amount over a relatively short time. They assert that almost one-third of pre-development Muddy River flows are currently consumed before reaching the Moapa gage, and these applications should be denied on the grounds that they would impact senior rights by the full amount.³³

The MBOP argues for the creation of a new water management unit that would include upgradient basins including at least the Muddy River Springs Area, Coyote Spring Valley and Kane Springs Valley. They assert to prevent future desiccation of the headwater springs, the currently undeveloped permits within the proposed management unit must be largely revoked, restricted, or otherwise creatively managed because they total up to a similar order of magnitude as the current flow of the Muddy River.³⁴ They indicate that the water-resource potential of the southern flow field should be evaluated with a large interim pumping experiment in the northern portion of the southern flow field near the MBOP reservation.³⁵

5. Moapa Valley Water District

MVWD evaluated only data for water levels and flows in the Muddy River Springs Area. MVWD's report recognizes that water-level declines are attributable to MX-5 pumping, as are spring flow decreases at the two Pedersen springs, Warm Springs West gage, and Baldwin Spring, but it does not recognize effects at Jones Spring or Muddy Spring at LDS.

As to the availability of additional water resources, MVWD did not provide a direct response. However, MVWD submitted a supplemental report analyzing its applications in the Lower Moapa Valley, coming to the conclusion that those applications could be developed without impacting the springs.

6. Great Basin Water Network

GBWN provided both a technical report by Dr. Tom Myers and a letter summarizing their position and interpretation of the test. Their report recognized a water-level decline in

³³ *Id.* at 30.

³⁴ *Ibid.*

³⁵ *Id.* at 31.

Coyote Spring Valley and the Muddy River Springs Area and decreases in spring flow that they assert are directly attributable to the MX-5 well pumping. The report states that the test did not provide adequate data to analyze water availability in the other Order 1169 basins. As to the availability of additional water resources for the pending applications, GBWN argues against granting any of the pending applications and states that pumpage of even the existing water rights in Coyote Spring Valley and the Muddy River Springs Area will result in spring flow reductions to rates that are insufficient to maintain a known endangered species.

GBWN somewhat contradicts their own report with a statement that the test did not provide adequate data to analyze water availability, and asserts that the information obtained was sufficient to make determinations on the effects of the pumping and of the availability of water not just in Coyote Spring Valley, but in all of the Order 1169 basins. The letter also argues that their report supports a conclusion that full pumping of existing rights in the Order 1169 basins will unacceptably decrease spring discharge.

7. Center for Biological Diversity

CBD used the same report from Dr. Myers that was filed by the GBWN. CBD believes that pumping of existing water rights will have unacceptable effects on the springs, and, therefore, all pending applications in the Order 1169 basins should be denied. Furthermore, they assert that all applications in the entire White River Flow System up to Cave Valley should be denied. CBD also recommends that the State Engineer take administrative action to reduce permits in the Order 1169 basins to sustainable levels.

Based on the responses received and the State Engineer's own interpretations of the test, the State Engineer finds that sufficient information has been obtained from the Order 1169 pumping test to rule on the pending applications.

Based on reports filed pursuant to Orders 1169 and 1169A and the State Engineer's analysis of the pumping test, the State Engineer finds:

1. The information obtained from the pumping test satisfied the goal of the test and is sufficient to document the effects of pumping on water levels and spring flows in the Order 1169 basins. The information obtained from the test and reports is adequate to formulate an informed opinion as to the future impacts from groundwater pumping and the availability of groundwater in Coyote Spring Valley pursuant to the applications.
2. The impacts of pumping from the MX-5 well, and other existing wells, during the pumping test are widespread, and extend north in Coyote Spring Valley at least to Kane

Springs Valley, south to Hidden Valley and Garnet Valley, and southeast to the Muddy River Springs Area and California Wash. Pumping effects were seen in a small part of the Black Mountains Area, but were not observed in Lower Moapa Valley. Groundwater-level declines attributable to MX-5 pumping range from less than one foot in northern Coyote Springs Valley, two feet or more in central Coyote Spring Valley, and one foot or more in the carbonate aquifer in the Muddy River Springs Area and California Wash. The additional pumping at the MX-5 well contributed significantly to decreases in spring flow at high-elevation spring (Pedersen Springs) sources of the Muddy River, and contributed to measurable decreases in flow at Baldwin and Jones Springs and to the numerous springs whose combined flows are measured at the Warm Springs West and Iverson gages. The pumping test effects documented in Coyote Spring Valley, Muddy River Springs Area, Hidden Valley, Garnet Valley, California Wash, and part of Black Mountains Area provide clear proof of the close hydrologic connection of the basins that distinguishes these basins from other basins in Nevada.

3. Most of the groundwater in Coyote Spring Valley flows to the Muddy River Springs Area, whose surface waters are fully appropriated. After pumping approximately 5,300 afa in the Coyote Spring Valley basin for just over two years, flows in some of the Muddy River springs decreased significantly, and the decrease in flow continued through the end of pumping. The results of the pumping test and opinions provided by the DOI Bureaus, the MBOP, GBWN and CBD are persuasive, and therefore the State Engineer finds that any additional pumping from the pending applications in addition to existing rights would result in a significant regional water-level decline and an associated decrease in spring and river flows, and would conflict with existing rights at the headwater springs to the Muddy River in a few years or less. There is no unappropriated water available in Coyote Spring Valley to satisfy the subject applications.

IV.

Perennial Yield

Nevada Revised Statute § 533.370(2) requires that the State Engineer reject an application to appropriate water where there is no unappropriated water at the source of supply. For groundwater appropriations, the State Engineer uses the perennial yield of a basin as the measure of the amount of water available for appropriation. The perennial yield is based on water budgets for the basin in question. Water budgets and perennial yield were significant issues raised in the 2001 hearings on the pending applications that needed additional information.

The perennial yield of a groundwater basin has been defined in numerous State Engineer rulings. It can 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. If the perennial yield is exceeded, groundwater levels will decline and steady state conditions will not be achieved, a situation commonly referred to as groundwater mining. Additionally, withdrawals of groundwater in excess of the perennial yield may contribute to adverse conditions such as water quality degradation, storage depletion, diminishing yield of wells, increased pumping costs, and land subsidence.

In the eleven years since Order 1169 was issued, much additional hydrologic information has been made available, including publications by the U.S. Geological Survey and others. There have also been hearings before the Office of the State Engineer for water rights in nearby hydrographic basins. Technical exhibits and expert testimony in those hearings include hydrological analyses of the carbonate aquifers and water budgets in the Order 1169 basins. This information significantly expands on the available knowledge of the hydrology and water resources of the Lower White River Flow System in Coyote Spring Valley, the Muddy River Springs Area and the surrounding basins. In hearings held in the fall of 2011 concerning SNWA applications in Delamar Valley, Dry Lake Valley, and Cave Valley, several exhibits and expert testimony were presented that revise and update information presented at the Coyote Spring Valley water rights hearings.³⁶

³⁶ SNWA Exhibit Nos. 258 and 452, In the Matter of Applications 53987 through 53992 filed by the SNWA to Appropriate the Groundwater in Spring Valley, Cave Valley, Dry Lake Valley and Delamar Valley Hydrographic Basins (180, 181, 182, 184), September 26 through October 14 and October 31 through November 18, 2011, official records in the Office of the State Engineer.

SNWA Exhibit No. 452 from the 2011 hearing on Delamar, Dry Lake and Cave valleys is an Excel workbook that is designed to estimate groundwater recharge for all of the basins contributing to the White River Flow System from the Muddy River Springs Area northward. The exhibit was accepted by the State Engineer with some revisions,³⁷ and basin recharge and interbasin flows are specified for both Coyote Spring Valley and the Muddy River Springs Area hydrographic basins. From that exhibit, the supply of water to the Coyote Spring Valley is estimated to be approximately 41,000 afa, of which, 39,000 is subsurface inflow from upgradient basins and 2,000 afa is derived from in-basin recharge. Prior to groundwater pumping in the region, all of this water flowed in the subsurface to the Muddy River Springs Area.

The total pre-development supply of water to the Muddy River Springs Area is estimated to be approximately 49,000 afa. The basin receives roughly 41,000 afa from subsurface inflow from Coyote Spring Valley, and an estimated 8,000 afa from the Lower Meadow Valley Wash. In-basin recharge is minimal. Discharge from the basin by surface flow is estimated to be 33,600 afa, evapotranspiration is approximately 6,000 afa, and subsurface outflow to downgradient basins is an estimated 9,900 afa.³⁸ It is noted here that during periods of flood, inflows and outflows can be significantly greater than average. Flood flows are not included in these calculations, in part because these sources are transitory and not amenable to capture and long-term supply.

For basins similar to Coyote Spring Valley, where there is no groundwater evapotranspiration and all of the groundwater flows in the subsurface to an adjacent basin, recent rulings have limited the perennial yield to the portion of recharge from precipitation in that basin that was not needed to satisfy rights in the immediate downgradient basin.³⁹ In State Engineer's Ruling Nos. 6165, 6166, and 6167, there was a consideration for how long it might take for an existing water right to be impacted, and the State Engineer found that where no significant effects would be felt for hundreds of years, the upgradient groundwater could be appropriated. Other early decisions of the State Engineer had allowed one-half of the total subsurface groundwater discharge to be appropriated as the perennial yield of such basins. State of Nevada

³⁷ State Engineer's Ruling No. 6166, dated March 22, 2012, pp. 72 – 73, official records in the Office of the State Engineer.

³⁸ SNWA Exhibit Nos. 258 and 452, In the Matter of Applications 53987 through 53992 filed by the SNWA to Appropriate the Groundwater in Spring Valley, Cave Valley, Dry Lake Valley and Delamar Valley Hydrographic Basins (180, 181, 182, 184), September 26 through October 14 and October 31 through November 18, 2011, official records in the Office of the State Engineer.

³⁹ State Engineer's Ruling Nos. 6165, 6166, and 6167, dated March 22, 2012, official records in the Office of the State Engineer.

Water Planning Report No. 3 lists the perennial yield of Coyote Spring Valley as 18,000 acre-feet, approximately one-half of the basin subsurface discharge.⁴⁰ One of the goals of the Order 1169 test was to determine the perennial yield of Coyote Spring Valley.

The vast majority of the scientific literature supports the premise that, unlike other separate and distinct basins in Nevada that do not feature carbonate-rock aquifers, all of the Order 1169 basins share virtually all of the same supply of water. The Order 1169 pumping test further supports the conclusion that pumping from any of the five basins with a close hydrologic connection (Coyote Spring Valley, Muddy River Springs Area, Hidden Valley, Garnet Valley and California Wash) will have a similar impact on water levels in the five-basin area and on the Muddy River spring flows. Therefore, because these basins share a unique and close hydrological connection and share virtually all of the same source and supply of water, unlike other basins in Nevada, these five basins will be jointly managed. The perennial yield of these basins cannot be more than the total annual supply of 50,000 acre-feet. Because the Muddy River and Muddy River springs also utilize this supply, and are the most senior water rights in the region, the perennial yield is further reduced to an amount less than 50,000 acre-feet. The State Engineer finds that the amount and location of groundwater that can be developed without capture of and conflict with senior water rights on the Muddy River and springs remains unclear, but the evidence is overwhelming that unappropriated water does not exist.

V.

Recent rulings by the State Engineer for groundwater applications in other basins within the White River Flow System allowed for the appropriation of additional water.⁴¹ These basins, Cave Valley, Dry Lake Valley, and Delamar Valley Hydrographic Basins, lie 40 to 100 miles north of the Muddy River Springs. Groundwater from both Dry Lake Valley and Delamar Valley is believed to contribute to discharge from the springs. Water rights were granted in the Cave Valley, Dry Lake Valley and Delamar Valley basins based on two critical points that do not exist in the basins in Order 1169. First, the groundwater appropriated in the Cave Valley, Dry Lake Valley and Delamar Valley basins is recharged within the basins. Water is available at the source and can be developed without depleting the supply. Second, the water can be developed without conflicting with any existing rights for hundreds of years. In contrast, neither of these conditions is met in the Order 1169 basins. Recharge in each of the Order 1169 basins is

⁴⁰ Office of the State Engineer, *Water for Nevada, State of Nevada Water Planning Report No. 3*, Oct. 1971.

⁴¹ State Engineer's Ruling Nos. 6165, 6166 and 6167, dated March 22, 2012, official records in the Office of the State Engineer.

already appropriated. Subsurface inflow is appropriated as well. Development of additional water will conflict with existing rights in months to years. The State Engineer finds the basins of Order 1169 fail on both statutory requirements.

VI.

Existing Rights

Nevada Revised Statute § 533.370(2) requires that the State Engineer reject an application to appropriate water where the use of the water conflicts with existing rights or with protectable interests in existing domestic wells. There are 16,200 acre-feet of senior groundwater rights in Coyote Spring Valley as well as approximately 33,000 acre-feet of senior groundwater rights in the other Order 1169 basins. The Muddy River and springs, the discharge location of the bulk of the region's water, have approximately 30,000 afa of decreed and appropriative rights.

One of the main goals of Order 1169 and the associated pumping test was to observe the effects of increased pumping on groundwater levels and spring flows. The Pedersen and Pedersen East springs, the highest elevation springs in the area and which are considered to be the "canary in the coal mine" with respect to impacts from pumping, showed an unprecedented decrease in flow during the pumping test. Pedersen spring flow decreased to 0.08 cfs, down from its average of about 0.22 cfs prior to the test. Pedersen East decreased to 0.12 cfs, down from its average flow of 0.2 cfs prior to the test.^{42,43} The Warm Springs West gage, the site at which trigger levels have been set among parties to a memorandum of agreement,⁴⁴ declined from 3.6 to 3.3 cfs during the test.⁴⁵ Baldwin and Jones Springs declined about 4% during the test.⁴⁶ The Muddy River at the Moapa gage did not display any decrease in flow,⁴⁷ although the

⁴² U.S. Fish and Wildlife Service, U.S. Bureau of Land Management and U.S. National Park Service Order 1169A Report, *Test Impacts and Availability of Water Pursuant to Applications Pending Under Order 1169*, pp. 43 – 46, June 28, 2013, official records in the Office of the State Engineer.

⁴³ <http://waterdata.usgs.gov/nv/nwis/>.

⁴⁴ In 2006, a Memorandum of Agreement (MOA) was signed by the Southern Nevada Water Authority, U.S. Fish and Wildlife Service, Coyote Springs Investment, LLC, Moapa Band of Paiute Indians, and Moapa Valley Water District pursuant to which, the parties agreed to certain conservation measures for the protection and recovery of the Moapa dace, an endangered species found in the Moapa Valley National Wildlife Refuge.

⁴⁵ <http://waterdata.usgs.gov/nv/nwis/>.

⁴⁶ U.S. Fish and Wildlife Service, U.S. Bureau of Land Management and U.S. National Park Service Order 1169A Report, *Test Impacts and Availability of Water Pursuant to Applications Pending Under Order 1169*, pp. 50 – 51, June 28, 2013, official records in the Office of the State Engineer.

⁴⁷ Southern Nevada Water Authority, *Nevada State Engineer Order 1169 and 1169A Study Report*, p. 41, June 2013, official records in the Office of the State Engineer.

MBOP report points out that total flux of the system is variable, and argues that flows in the river would have been even higher if Order 1169 pumping had not occurred.⁴⁸

The State Engineer finds that pumping under the Order 1169 test measurably reduced flows in headwater springs of the Muddy River, and it is clear that if pending water right applications were permitted and pumped in addition to existing groundwater rights in Coyote Spring Valley and the other Order 1169 basins, headwater spring flows would be reduced in tens of years or less to the point that there would be a conflict with existing rights. The State Engineer finds the Muddy River and the Muddy River springs, the discharge location of the bulk of the region's water, is fully appropriated. As for the Muddy River, the State Engineer finds that evidence submitted by the DOI Bureaus and MBOP is convincing that pumping of groundwater under the pending applications in addition to existing rights would reduce the flow of the Muddy River in tens of years or less to the point where there would be a conflict with existing rights.

VII.

Public Interest

Nevada Revised Statute § 533.370(2) requires the State Engineer reject an application if the use of the water threatens to prove detrimental to the public interest. The State Engineer views this requirement in terms of Nevada water law and management of the public's water, but not to areas that are outside of his purview. The State Engineer finds to approve applications that will within a short period of time conflict with existing water rights threatens to prove detrimental to the public interest.

The Moapa dace is an endangered species that lives only in the headwater springs of the Muddy River. The USFWS holds water rights on some of the springs in the Muddy River Springs Area that were appropriated specifically for the protection of the dace. The State Engineer finds to permit the appropriation of additional groundwater resources in the Coyote Spring Valley, which is directly connected to the regional aquifer in the Order 1169 area, would impair protection of these springs and the habitat of the Moapa dace and therefore threatens to prove detrimental to the public interest.

⁴⁸ Johnson and Mifflin, *Summary of Order 1169 Testing Impacts, per Order 1169A*, pp. 5 - 8, June 28, 2013, official records in the Office of the State Engineer.

CONCLUSIONS

I.

The State Engineer has jurisdiction over the parties and the subject matter of this action and determination.⁴⁹

II.

The State Engineer is prohibited by law from granting a permit under an application to appropriate the public water where:⁵⁰

- 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 protectable 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 there is no additional groundwater available for appropriation in the Coyote Spring Valley Hydrographic Basin without conflicting with existing water rights in the Order 1169 basins.

IV.

The State Engineer concludes that approval of the applications would threaten to prove detrimental to the public interest by removing water that in the past has been available for the endangered species in the Order 1169 basins. The State Engineer concludes that while the use of the water under these applications may have a public benefit, removing the water from the springs would threaten to prove detrimental to the public interest in that it would threaten the water resources upon which the endangered Moapa dace are dependent.

RULING

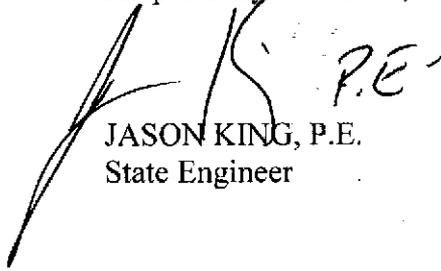
The protests to Applications 54055, 54056, 54057, 54058, 54059, 63272, 63273, 63274, 63275, 63276, 63867, 63868, 63869, 63870, 63871, 63872, 63873, 63874, 63875, and 63876 are hereby upheld in part and the applications are hereby denied on the grounds that there is no unappropriated groundwater at the source of the supply, the proposed use would conflict with existing rights in the Order 1169 basins and the proposed use of the water would threaten to prove detrimental to the public interest in that it would threaten the water resources upon which

⁴⁹ NRS Chapters 533 and 534.

⁵⁰ NRS § 533.370(2).

the endangered Moapa dace are dependent. No ruling is made on the merits of the remaining protest grounds.

Respectfully submitted,

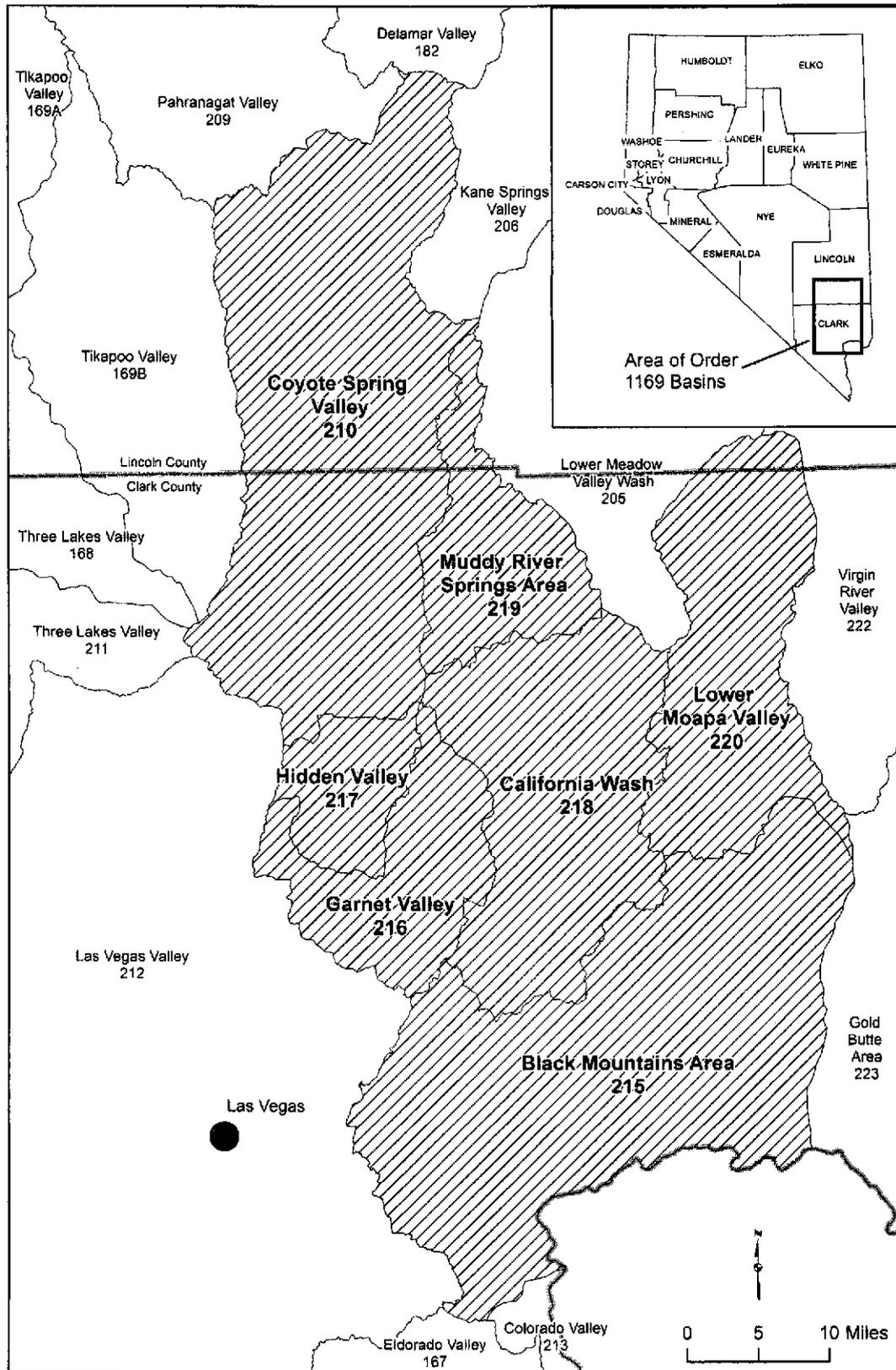
A handwritten signature in black ink, appearing to read 'JK P.E.', is written over the typed name. The signature is stylized and slanted.

JASON KING, P.E.
State Engineer

Dated this 29th day of

January, 2014.

ATTACHMENT 1



Location Map of the Order 1169 Hydrographic Basins, Clark County and Lincoln County, Nevada.